

642

ORDER NO. RD7809-1612C

Service Manual

Radio

11-BAND
COMMUNICATION

RF-4900LBS

06040267 91000241 26
SM-RF4900LBS
SERVICE MANUAL 3



SPECIFICATIONS

Frequency Range: FM 87.5~108 MHz
LW 145~410 kHz (2060~732m)
MW 520~1610 kHz (577~186m)
SW₁ 1.6~3 MHz (188~100m)
SW₂ 3~7 MHz (100~42.9m)
SW₃ 7~11 MHz (42.9~27.3m)
SW₄ 11~15 MHz (27.3~20m)
SW₅ 15~19 MHz (20~15.8m)
SW₆ 19~23 MHz (15.8~13m)
SW₇ 22~26 MHz (13.6~11.5m)
SW₈ 26~30 MHz (11.5~10.0m)

Intermediate Frequency: FM 10.7 MHz
LW/MW/SW₁ 455 kHz
SW₂~₈ 1st IF 2 MHz
2nd IF 455 kHz

Sensitivity: FM 6 μ V (S/N 26 dB)
LW 100 μ V/m (S/N 10 dB)
MW 60 μ V/m (S/N 10 dB)
SW₁ 1 μ V (S/N 10 dB)
SW₂ 1.3 μ V (S/N 10 dB)
SW₃ 0.8 μ V (S/N 10 dB)
SW₄ 1.2 μ V (S/N 10 dB)
SW₅ 1.2 μ V (S/N 10 dB)
SW₆ 1.2 μ V (S/N 10 dB)
SW₇ 2.0 μ V (S/N 10 dB)
SW₈ 1.4 μ V (S/N 10 dB)

Power Output: DC Max. 3W (60% Mod. 400 Hz)
Power Source: AC 110~125/220~240V 50/60 Hz

or 12V (Eight "D" Size Flash-light Batteries)
(National UM-1 or equivalent)

Power Consumption: 10W (AC Only)
Speaker: 10 cm (4") PM Dynamic Speaker
Dimensions: 18 $\frac{3}{8}$ "(Wide) \times 7 $\frac{1}{8}$ "(High) \times 13 $\frac{1}{8}$ "(Deep)
(482 \times 200 \times 354 mm)

Weight: 8 kg (17 lb 10 oz) without batteries
Impedance: Speaker4 Ω

AUX Jack
Din Type500k Ω (50 mV)
Miniature Type ...300k Ω (20 mV)
REC OUT Jack
Din Type80k Ω (100 mV)
Miniature Type ...4k Ω (40 mV)
Earphone Jack4~8 Ω
FM EXT ANT300 Ω
SW₁/LW/MW75 Ω
SW₂~₈75 Ω

Specifications are subject to change without notice for further improvement.

 **Panasonic**

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka, Japan

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DISASSEMBLY INSTRUCTIONS

■ TO REMOVE CABINET COVER

1. Remove the four (4) covers for the handle in the direction of arrow, as shown in fig. 1.
2. Remove the six (6) screws (nos. 1~6) for the handle and cabinet cover, as shown in fig. 2.
3. Remove the six (6) screws (nos. 1~6) for the handle and cabinet cover, as shown in fig. 3.
4. Remove the eight (8) screws (nos. 1~8) for the cabinet cover, as shown in fig. 4.
5. Remove the nine (9) screws (nos. 1~9) for the cabinet cover, as shown in fig. 5.
6. Remove the cabinet cover.
7. To reassemble, reverse the above procedure.

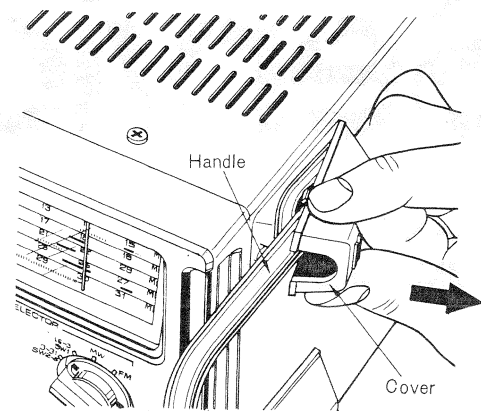


Fig. 1

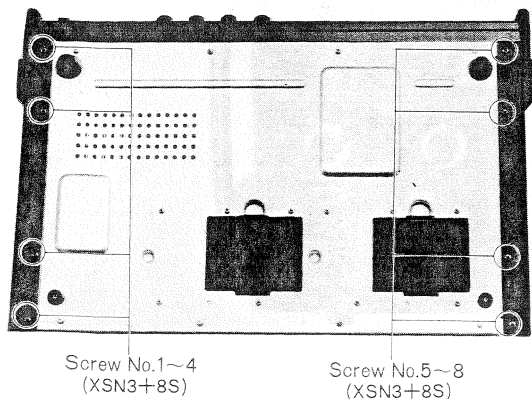


Fig. 4

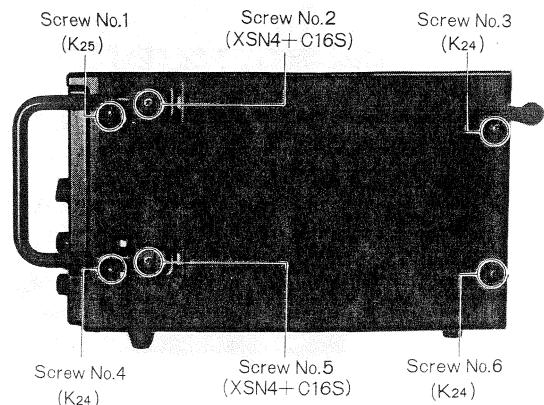


Fig. 2

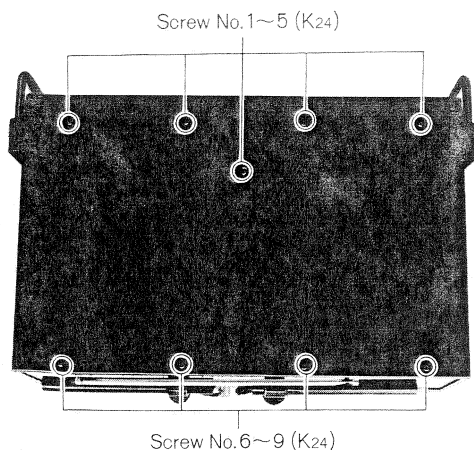


Fig. 5

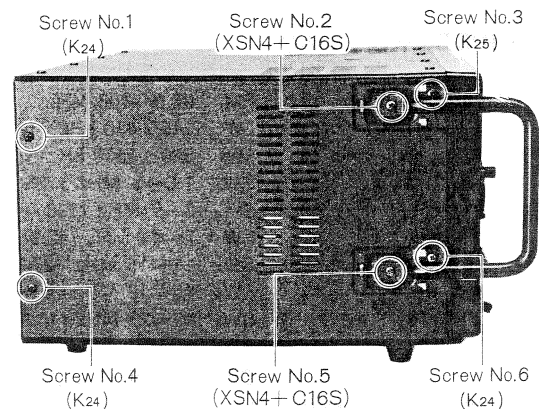


Fig. 3

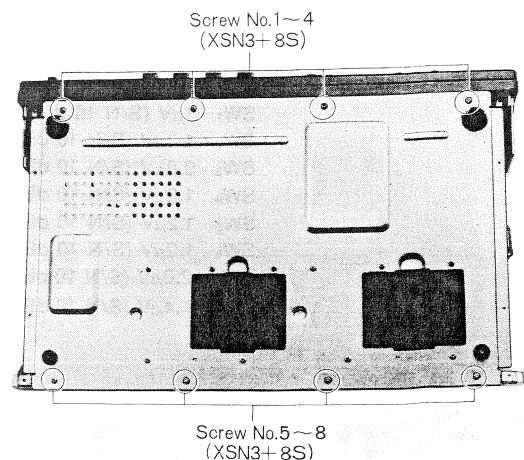


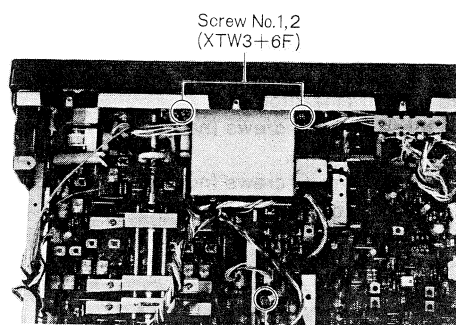
Fig. 6

■ TO REMOVE BOTTOM COVER

1. Remove the cabinet cover. (Refer to cabinet cover removal instruction.)
2. Remove the eight (8) screws (nos. 1~8) for the bottom cover as shown in fig. 6.
3. Remove the bottom cover.
4. Remove the socket from power source PC board.
5. To reassemble, reverse the above procedure.

■ TO REMOVE FREQUENCY COUNTER

1. Remove the cabinet cover. (Refer to cabinet cover removal instruction.)
2. Remove the socket from PC board.
3. Remove the three (3) screws (nos. 1~3) for the frequency counter, as shown in fig. 7.
4. Remove the two(2) sockets (nos 1 & 2) for the frequency counter, as shown in fig. 8-1.
5. Remove the frequency counter.
6. To reassemble, reverse the above procedure.

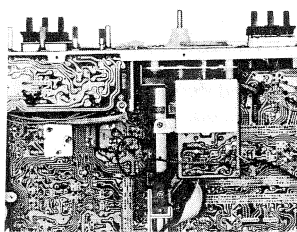


Screw No.3
(XTW3+6L)

Fig. 7

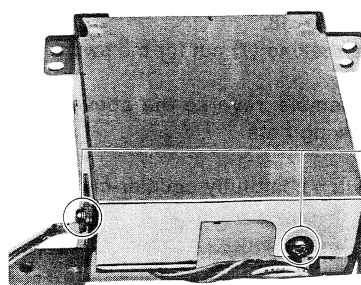
■ TO REMOVE PC BOARD (Frequency Counter)

1. Remove the frequency counter.
2. Remove the two (2) screws (nos. 1 & 2) for the shield cover, as shown in fig. 8-2.
3. Remove the two (2) screws (nos. 1 & 2) for the PC board, as shown in fig. 9.
4. Remove the PC board.
5. To reassemble, reverse the above procedure.



Socket No.1,2

Fig. 8-1



Screw No.1,2
(XTW3+6L)

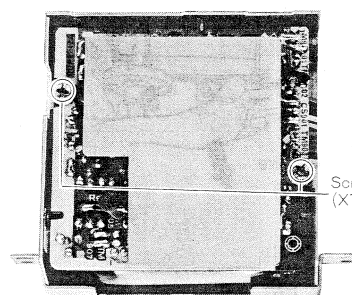
Fig. 8-2

■ TO REMOVE PC BOARD (VFO Circuit)

1. Remove the bottom cover. (Refer to bottom cover removal instruction.)
2. Loosen the two (2) screws (nos. 1 & 2) for the tuning capacitor shaft, as shown in fig. 10.
3. Remove the one (1) screw for the PC board, as shown in fig. 11.
4. Remove the three (3) screws (nos. 1~3) for the PC board, as shown in fig. 12.
5. To remove PC board completely unsolder lead wires from the other PC board.
6. To reassemble, reverse the above procedure and read the following notes.

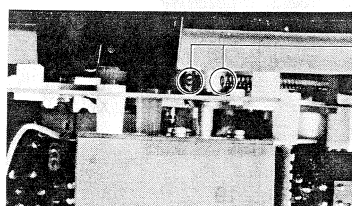
Notes:

1. Set tuning capacitor to maximum capacity.
2. Turn tuning shaft fully counter-clockwise.



Screw No.1,2
(XTN3+6F)

Fig. 9



Screw No.1,2

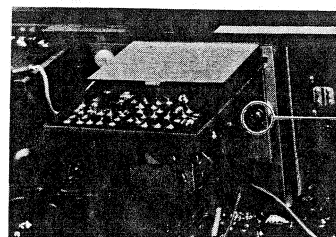
Fig. 10

■ TO REMOVE FERRITE ANTENNA

1. Remove the bottom cover. (Refer to the bottom cover removal instruction.)
2. Unsolder lead wires from PC board.
3. Push the catches in the direction of arrows, as shown in fig. 13 and remove the holder.
4. Push the holder in the direction of arrows ① and ② and open the holder in the direction of arrow ③ and ④, as shown in fig. 14.
5. Remove the ferrite antenna.
6. To reassemble, reverse the above procedure and read the following note.

Note:

1. Insert the lead wires in the slit of holder, as shown in fig. 15.



Screw
(XTW3+10F)

Fig. 11

■ TO REMOVE FRONT PANEL

- 1. Remove the bottom cover. (Refer to the bottom cover removal instruction.)
- 2. Pull out sockets from speaker.
- 3. Pull out socket from PC board.
- 4. Remove the eleven (11) knobs.
- 5. Remove the three (3) red screws (nos. 1~3) for the front panel, as shown in fig. 16.
- 6. Remove the three (3) red screws (nos. 1~3) for the front panel, as shown in fig. 17.
- 7. To reassemble, reverse the above procedure.

■ TO REMOVE BAND SWITCH SHAFT (SW₂ ~ 8, SW₁ , MW, FM, LW)

- 1. Remove the front panel. (Refer to the front panel removal instruction.)
- 2. Set band switch to "SW₂~₈" position.
- 3. Remove the switch wire in the direction of arrow, as shown in fig. 18.
- 4. Remove the one (1) nut for the switch shaft, as shown in fig. 19.
- 5. To reassemble, reverse the above procedure and read the following note.

Note:
1. Turn switch shaft fully counter-clockwise.

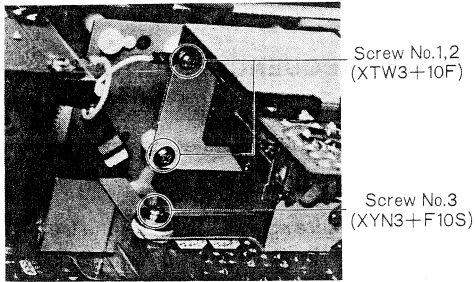


Fig. 12

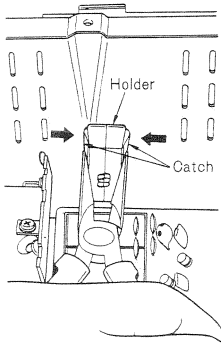


Fig. 13

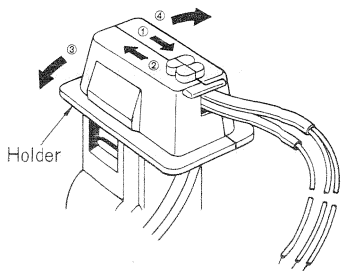


Fig. 14

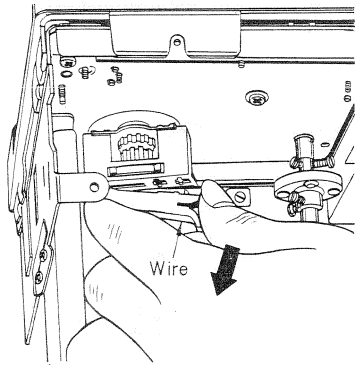


Fig. 18

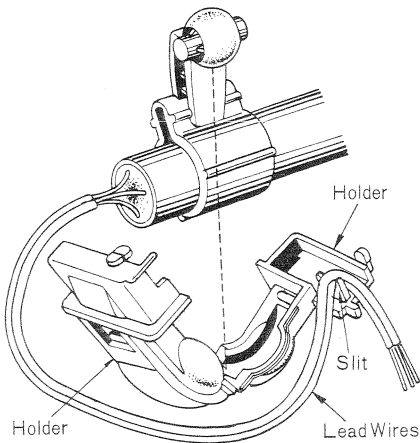


Fig. 15

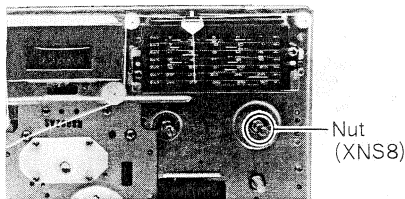


Fig. 19

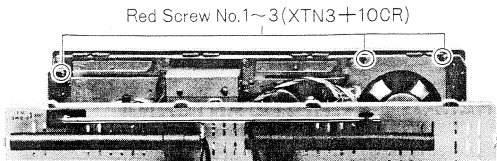


Fig. 16

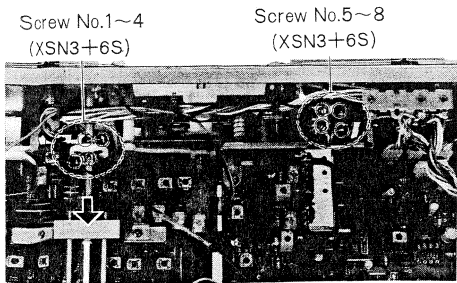


Fig. 20

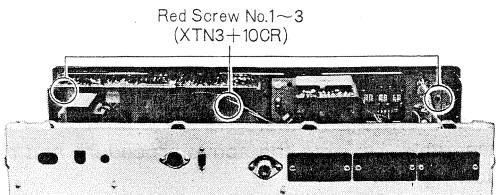


Fig. 17

■ TO REMOVE BAND SWITCH SHAFT (SW₂ ~ 8)

1. Remove the frequency counter. (Refer to the frequency counter removal instruction.)
2. Loosen the four (4) screws (nos. 1~4) for the joint, as shown in fig. 20.
3. Slide the joint in the direction of arrow, as shown in fig. 20.
4. Remove the six (6) screws (nos. 1~6) for the shaft, as shown in fig. 21.
5. Remove the shaft.
6. To reassemble, reverse the above procedure and read the following notes.

Notes:

1. Turn switch shaft fully counter-clockwise.
2. Set the switch lever at the position, as shown in fig. 23.

■ TO REMOVE PC BOARD (FM, LW, MW RF Circuit)

1. Remove the frequency counter. (Refer to the frequency counter removal instruction.)
2. Remove the front panel. (Refer to the front panel removal instruction.)
3. Remove the dial scale.
4. Remove the dial cord.
5. Turn dial drum fully counter-clockwise.
6. Loosen the four (4) screws (nos. 5~8) for the joint, as shown in fig. 20.
7. Remove the dial drum.
8. Set the band switch to "SW₂~8" position.
9. Remove the switch wire in the direction of arrow, as shown in fig. 22.
10. Remove the six (6) screws (nos. 7~12) for the PC board, as shown in fig. 21.
11. Remove the PC board.
12. To reassemble, reverse the above procedure and read the following notes.

Notes:

1. Set the tuning capacitor to maximum capacity.
2. Set the dial drum at the position, as shown in fig. 24.
3. Set the switch lever at the position, as shown in fig. 25.
4. Refer to dial cord installation (SW₁/MW/LW/FM).

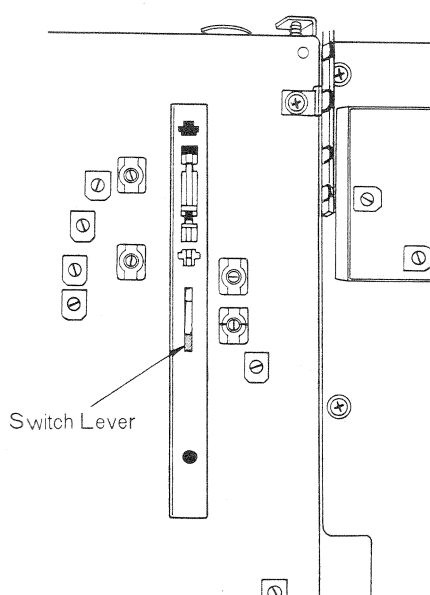


Fig. 25

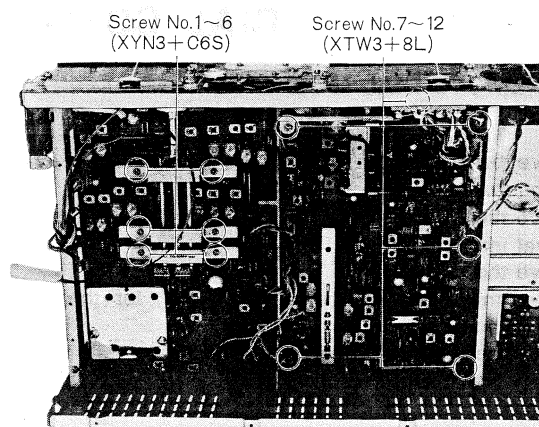


Fig. 21

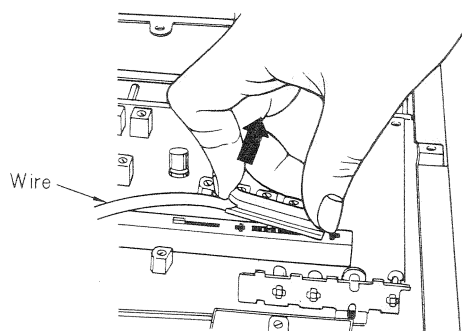


Fig. 22

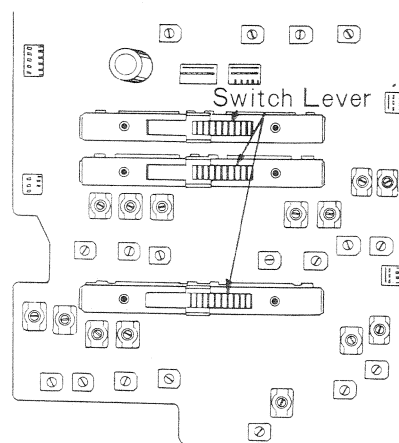


Fig. 23

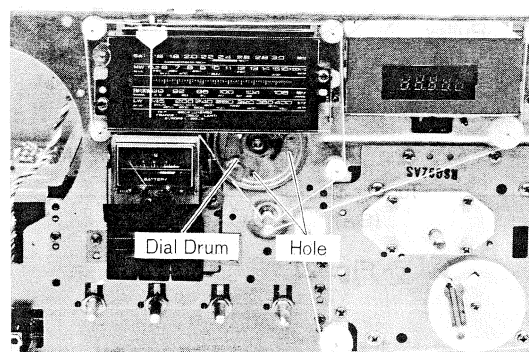


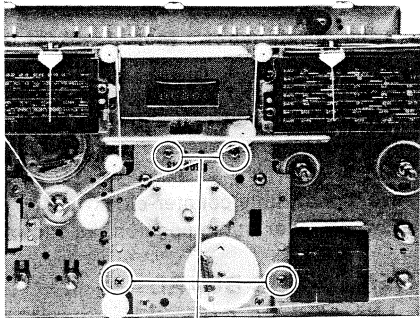
Fig. 24

DIAL CORD INSTALLATION GUIDE

■ TO REMOVE DIAL MECHANISM

- 1. Remove the front panel. (Refer to the front panel removal instruction.)
- 2. Remove the PC board (VFO circuit). (Refer to PC board removal instruction.)
- 3. Remove the dial cord.
- 4. Remove the four (4) screws (nos. 1~4) for the dial mechanism, as shown in fig. 26.
- 5. Remove the dial mechanism.
- 6. To reassemble, reverse the above procedure and read the following notes.

Note:
1. Refer to dial cord installation (SW₂~8).



Screw No.1~4 (XYN3+C6S)

Fig. 26

■ DIAL CORD INSTALLATION GUIDE

● SW₁ /MW/LW/FM

- 1. Remove the front panel. (Refer to the front panel removal instruction.)
- 2. Remove the dial scale.
- 3. Turn the dial drum fully counter-clockwise.
- 4. Cord length is 90 cm (35 $\frac{1}{16}$ "').
- 5. Arrows (1~10) indicate correct order and direction of cord installation, as shown in fig. 27.
- 6. Cement cord ends.
- 7. Turn tuning shaft fully counter-clockwise.
- 8. Attach pointer to cord.
- 9. Set pointer to "0" point of dial scale.

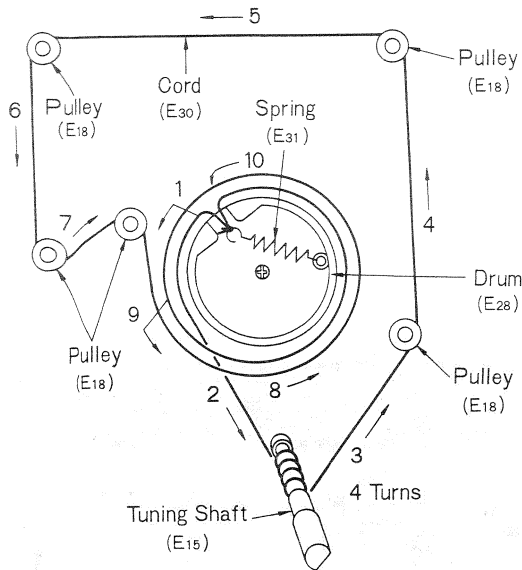


Fig. 27

● SW₂ ~SW₈

- 1. Remove the front panel. (Refer to the front panel removal instruction.)
- 2. Turn tuning shaft fully clockwise.
- 3. Cord length is 115 cm (47 $\frac{1}{4}$ "').
- 4. Arrows (1~9) indicate correct order and direction of cord installation, as shown in fig. 28.
- 5. Turn tuning shaft fully counter-clockwise.
- 6. Attach pointer to cord.
- 7. Set pointer to start point of dial scale.

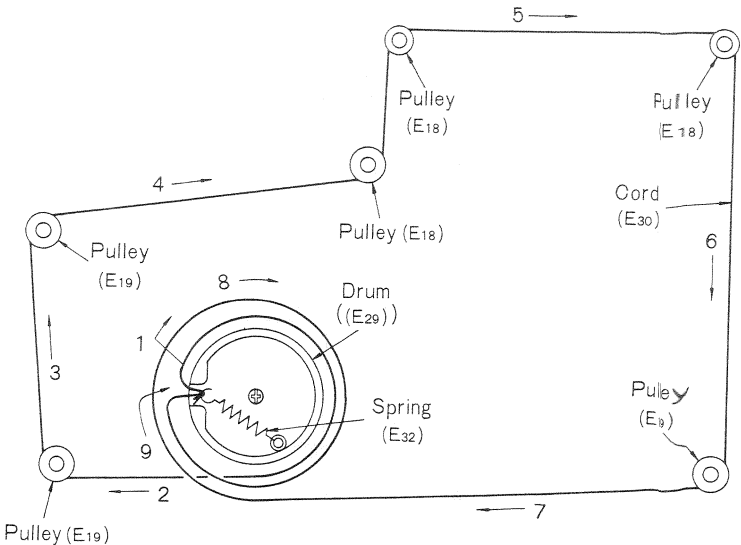


Fig. 28

■ HOW TO REPLACE CHIP

- 1. Remove solder for chip completely.
- 2. Remove chip by nippers, as shown in fig. 29.
- 3. Use tube for service parts as shown in fig. 30 and solder service parts according to following table. (please refer to Circuit Board Wiring View for the value of resistor and capacitor).

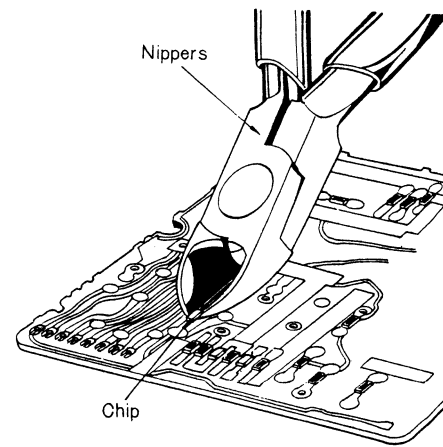


Fig. 29

Color	Original Parts Name	Service Parts Name
Black	Chip Resistor	Carbon Resistor
Brown	Chip Capacitor	Ceramic Capacitor
Blue	Chip Jumper	Lead Wire

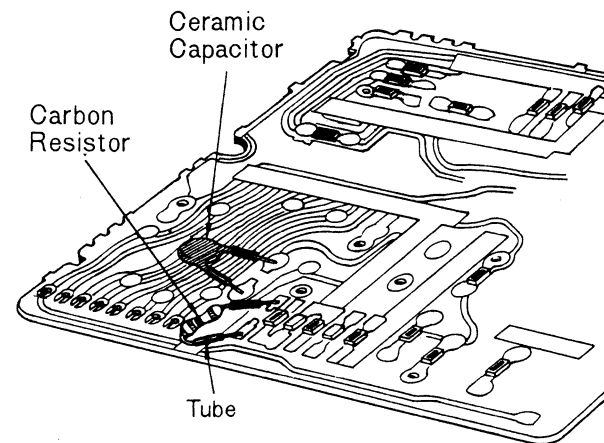


Fig. 30

CABINET PARTS LOCATIONS

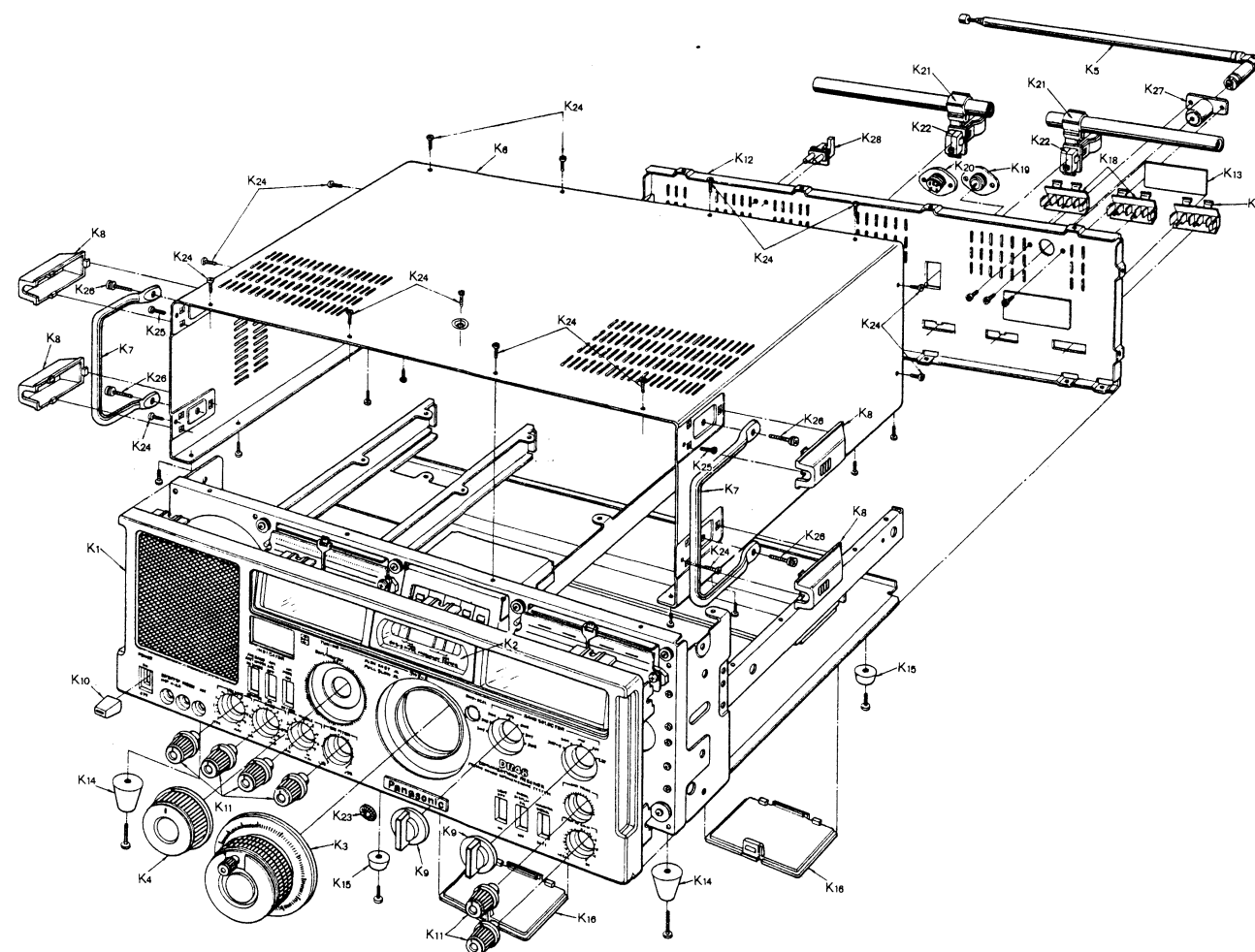


Fig. 31

■ VOLTAGE

IC1		Q1		Q2		Q3		Q4		Q5		Q6		Q7		Q8	
	MW	FM	S	0V	C	0V	C	0V	C	0V	C	0V	C	SW4	C	SW5,6	
1	4.7V	0V	G	0V	B	4.3V	B	4.33V	B	4.33V	B	4.31V	B	C	5.51V	C	5.51V
2	0V	0.72V	D	1.7V	E	5.05	E	4.65V	E	5.04V	E	5.04V	E	B	1.26V	B	1.26V
3	0V	0V	ID	2mA	Ie	1mA	Ie	1.2mA	Ie	0.5mA	Ie	0.5mA	Ie	E	0.62V	E	0.6V
4	0V	2.76V												Ie	0.4mA	Ie	0.4mA
5	0V	3.79V															
6	0V	4.95V															
7	0V	4.95V															
8	0V	3.8V															
9	0V	0V															
10	0.79V	0V															
11	4.72V	0V															
12	4.78V	0V															
13	0.62V	0V															
14	0.71V	0V															
15	4.79V	0V															
16	0.74V	0V															

IC2		Q9		Q10		Q11		Q12		Q13		Q14		Q15	
1	12V	SW7,8	C	0.35V	C	5.51V	SW4~8	C	10.66V	C	0V	SW2~8	C	SW2~8	
2	9.67V	C	5.51V	B	4.27V	B	4.27V	B	5.59V	B	4.31V	C	0V	C	0.03V
3	9.31V	E	1.24V	Ie	0.3mA	E	4.98V	E	4.97V	E	5.01V	B	3.51V	B	4.35V
4	7.32V	Ie	0.4mA			Ie	0.4mA	Ie	130mA	Ie	3.6mA	E	4.27V	E	5.02V
5	1.41V														
6	5.98V														
7	5.77V														
8	5.71V														
9	5.71V														
10	5.77V														
11	1.36V														
12	0V														
13	0V														
14	5.95V														
15	—														
16	—														

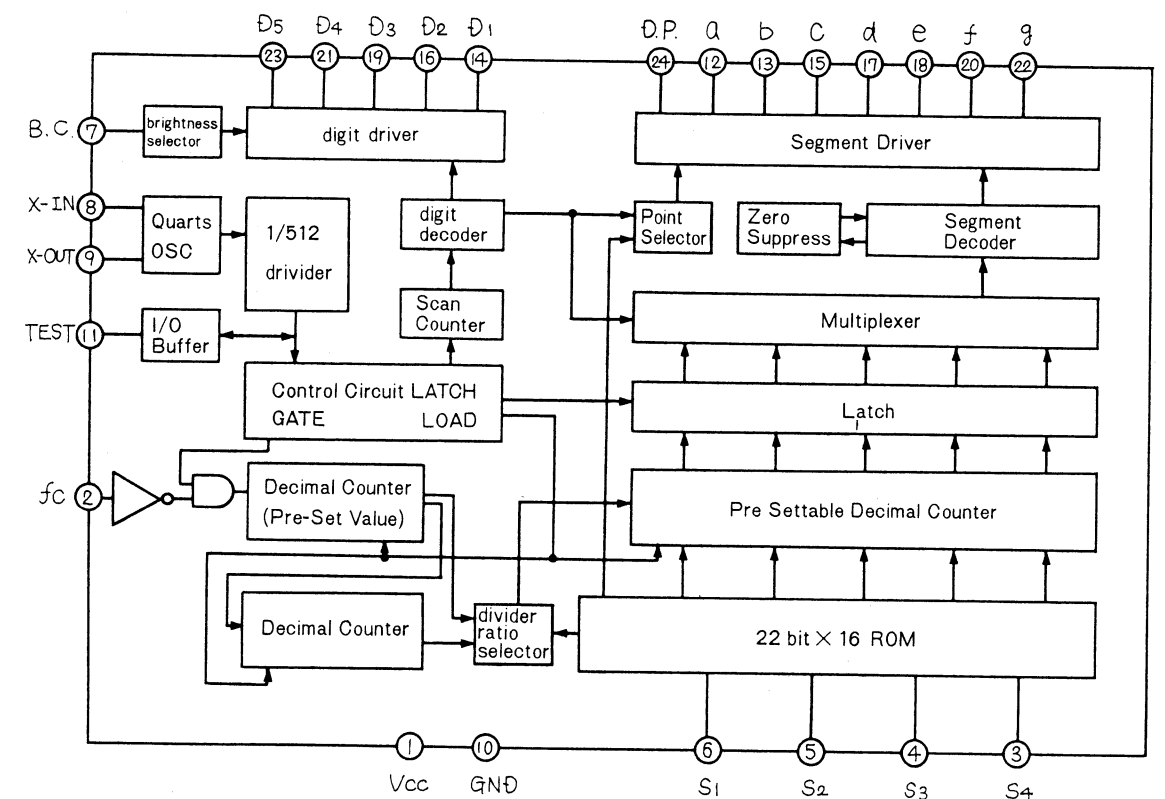
Q31		Q32		Q33		Q34		Q35		Q36		Q37		Q38	
	FM	C	0V	C	0V	C	0V	C	5.44V	C	2.22V	SW2~8	C	LW,MW	SW1
C	1.58V	B	3.74V	D	0V	G	2.78V	B	0.58V	B	0.99V	C	11.91V	C	5.3V
B	4.32V	E	4.48V	B	3.5V	B	0.75V	E	0V	E	0.36V	B	6.2V	B	3.15V
E	5.04V	Ie	0.65mA	E	4.1V	E	0.13V	Ie	0mA	Ie	0.76mA	E	5.54V	E	2.45V
Ie	0.8mA			Ie	1.3mA	Ie	0.8mA					Ie	25mA	Ie	2.4mA

Q39		Q40		Q41		Q43	
	FM	LW,MW,SW1	FM	SW2~8	SW2~8	SW1	FM
C	0.03V	C	0.01V	C	0.01V	C	0.01V
B	0.71V	B	0.7V	B	0.7V	B	0.70V
E	0V	E	0V	E	0V	E	0V
Ie	0.4mA	Ie	0.4mA	Ie	1.5mA	Ie	0.4mA

Q901		Q902		Q903		Q904		Q905	
	FM	FM	FM	C	4V	FM	FM	FM	FM
C	4.8V	C	3.5V	B	0.06V	C	4.8V	C	4.9V
B	1.25V	B	0.53V	E	0V	B	4.2V	B	4.3V
E	0.56V	E	0.56V			E	4.9V	E	4.9V

Q906		Q907		Q908	
	FM	FM	FM	C	2.5V
C	4.9V	C	2.5V	B	4.2V
B	0V	B	4.2V	E	4.9V
E	4.2V	E	4.9V		

■ IC902(RVIM54824P) BLOCK DIAGRAM



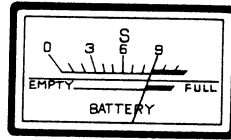
■ TUNE/BATT METER ADJUSTMENT

1. RADIO RECEIVER SETTING

- Set band switch to MW.
- Set volume control MIN.
- Set indicator switch to BATT.
- Set AM mode switch to AM.
- Set power source voltage to 7.2 volts DC.

2. REMARKS

- Adjust R₂₇₄ so that the pointer of meter stays as shown in figure right.



■ ALIGNMENT INSTRUCTIONS

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Notes:

1. Set power switch to ON.
2. Set volume control to MAX.
3. Set bass and treble control to center.
4. Set band switch to MW, LW, SW₁~SW₈ or FM.
5. Set SW cal control to center.
6. Set AM RF gain control to DX.
7. Set FM AFC/Band width switch to WIDE or OFF (FM).
8. Set light switch to OFF.
9. Set AM ANL switch to OFF.
10. Set BFO pitch control to center.
11. Set digital display switch to OFF.
12. Set AM mode switch to AM or SSB/CW.
13. Set indicator switch to signal.
14. Set ANT trim control to center.
15. Set radio-phono switch to RADIO.
16. Output of signal generator should be no higher than necessary to obtain an output reading.

■ MW, SW, LW ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
AM-IF ALIGNMENT Note: Set band width swith to "Narrow".						
(1) MW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. at 400 Hz	Point of non-interference.	Output meter across voice coil.	T ₄ (AM 1st IFT) T ₅ (AM 2nd IFT) T ₉ (AM 3rd IFT) T ₁₀ (AM 4th IFT) T ₈ (AM 5th IFT)	Adjust for maximum output.
BFO ALIGNMENT Note: Set band width switch to "Narrow".						
MW	"	600 kHz	Tune to signal.	Audio output from speaker.	L ₅₂ (BFO OSC Coil)	1. Cut off moduration after tune signal. 2. Set AM mode switch to CW/SSB. 3. Adjust for zero beat.
SW-1st IF and 2nd OSC ALIGNMENT						
(3) SW2	Connect EXT ANT (SW ₂ ~8) terminal.	2 MHz	Point of non-interference.	Output meter across voice coil.	L ₄₈ (SW 2nd OSC Coil) T ₁ (SW 1st IFT) T ₂ (SW 1st IFT)	Adjust for maximum output.
SW3	"	"	"	"	L ₄₉ (SW 2nd OSC Coil)	"
MW-RF ALIGNMENT						
(4) MW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	550 kHz	550 kHz 2.4 mm ($\frac{3}{32}$ ")	Output meter across voice coil	L ₅₀ (MW OSC Coil) L ₄₃ (MW ANT Coil)	Adjust for maximum output.
(5) MW	"	1500 kHz	1500 kHz 57 mm (2 $\frac{1}{4}$ ")	"	C ₂₂₇ (MW OSC Trimmer) C ₂₀₁ (MW ANT Trimmer)	Adjust for maximum output. Repeat steps (4) and (5).
LW-RF ALIGNMENT						
(6) LW	"	145 kHz	145 kHz 2.4 mm ($\frac{3}{32}$ ")	"	L ₅₄ (LW OSC Coil) L ₂₇ (LW ANT Coil)	Adjust for maximum output.
(7) LW	"	400 kHz	Tune to signal	"	C ₅₀₁ (LW ANT Trimmer)	"
(8) LW	"	415 kHz	Variable capacitor fully open.	"	C ₅₀₄ (LW OSC Coil)	Adjust for maximum output. Repeat steps (6)~(7).

■ SW4~8 X' tal ALIGNMENT

Note: Pull out socket CP₆.

BAND	CONNECTIONS	ADJUSTMENT	REMARKS
SW4	Connect RF voltmeter: ⊕ side to TP ₁ ⊖ side to E	C ₁₀₁ (Trimmer) L ₃₉ (39 MHz Coil)	1. Turn C ₁₀₁ to its center position. 2. Adjust L ₃₉ (Turn to upper) until 25 mV ± 1 mV is read on RF voltmeter.
SW4	Connect frequency counter: ⊕ side to TP ₁ ⊖ side to E	C ₁₀₁ (Trimmer)	Adjust C ₁₀₁ until 39, 100 MHz ± 100 Hz is read on RF voltmeter.
SW4	Connect RF voltmeter: ⊕ side to TP ₃ ⊖ side to E	L ₃₀ (31 MHz Coil)	Adjust L ₃₀ (Turn to upper) until 30 mV ± 1 mV is read on RF voltmeter.
SW5	"	L ₃₁ (27 MHz Coil)	Adjust L ₃₁ (Turn to upper) until 30 mV ± 1 mV is read on RF voltmeter.
SW7	"	L ₃₂ (20 MHz Coil)	Adjust L ₃₂ (Turn to upper) until 20 mV ± 1 mV is read on RF voltmeter.

■ 44~48 MHz BPF ALIGNMENT

Note: Pull out socket CP₆.

BAND	SWEEP GENERATOR		SWEEP SCOPE	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY			
SW4	Connect to test point TP ₁ through ceramic capacitor (0.01μF) negative side to point E	44.48 MHz	Connect to test point TP ₂ negative side to point E	L ₃₅ (BPF Coil) L ₃₆ (BPF Coil) L ₃₇ (BPF Coil)	1. Turn L ₃₅ to lower before adjustment. 2. Adjust L ₃₆ and L ₃₇ for maximum amplitude.

■ TRAP ALIGNMENT

Note: Pull out socket CP₆.

BAND	CONNECTIONS	ADJUSTMENT	REMARKS
SW4	Connect RF voltmeter: ⊕ side to TP ₂ ⊖ side to E	L ₃₅ 39 MHz (Trap Coil)	Adjust L ₃₅ for minimum RF voltmeter reading.
SW5	Connect RF voltmeter: ⊕ side to TP ₄ ⊖ side to E	L ₂₈ 27 MHz (Trap Coil)	Adjust L ₂₈ for minimum RF voltmeter reading.
SW7	"	L ₂₉ 20 MHz (Trap Coil)	Adjust L ₂₉ for minimum RF voltmeter reading.

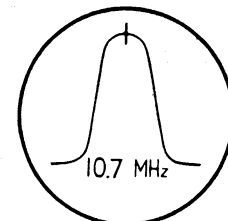


Fig. 32

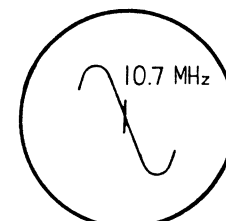


Fig. 33

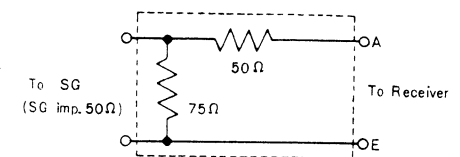
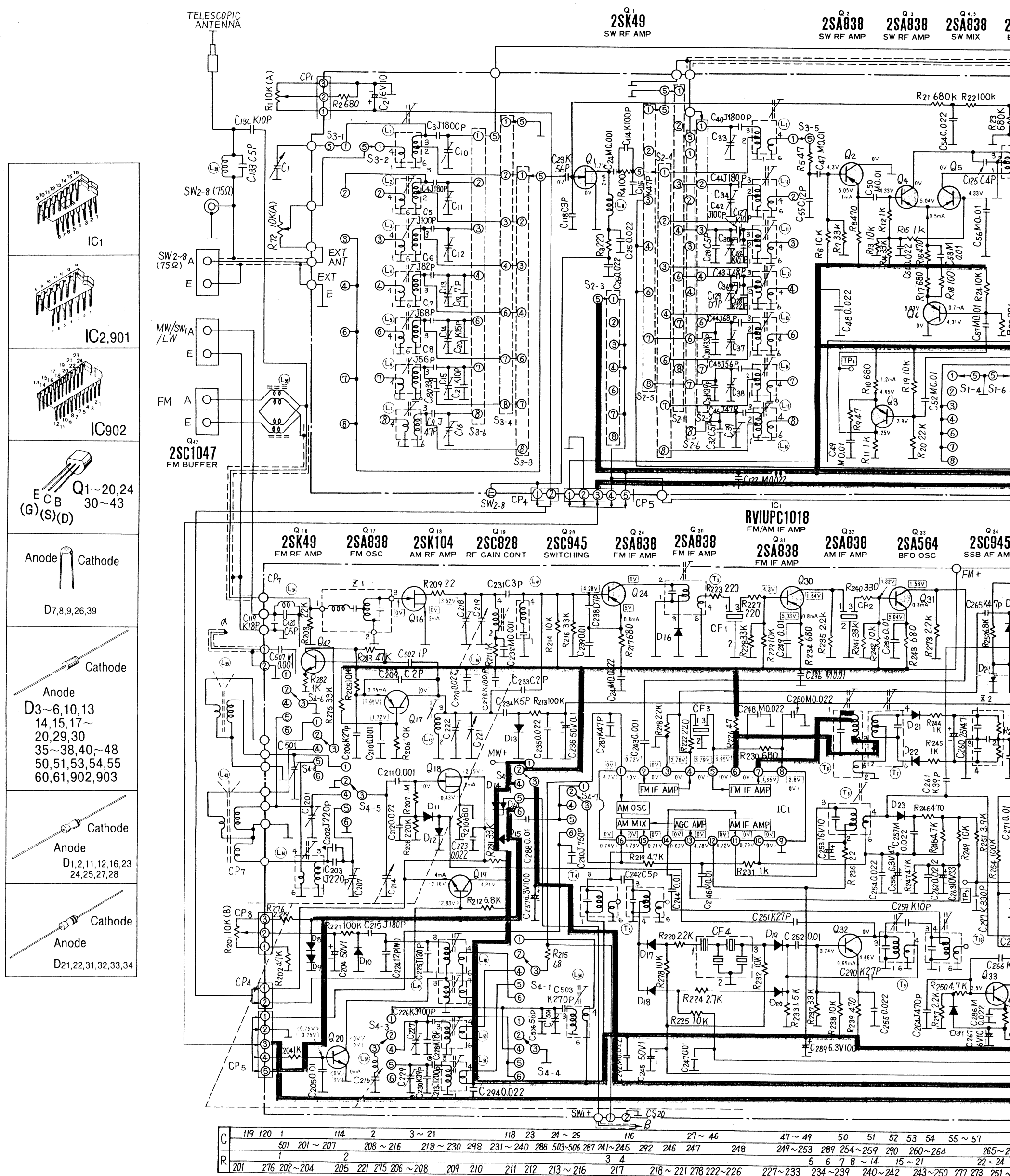


Fig. 34 FM Dummy Antenna



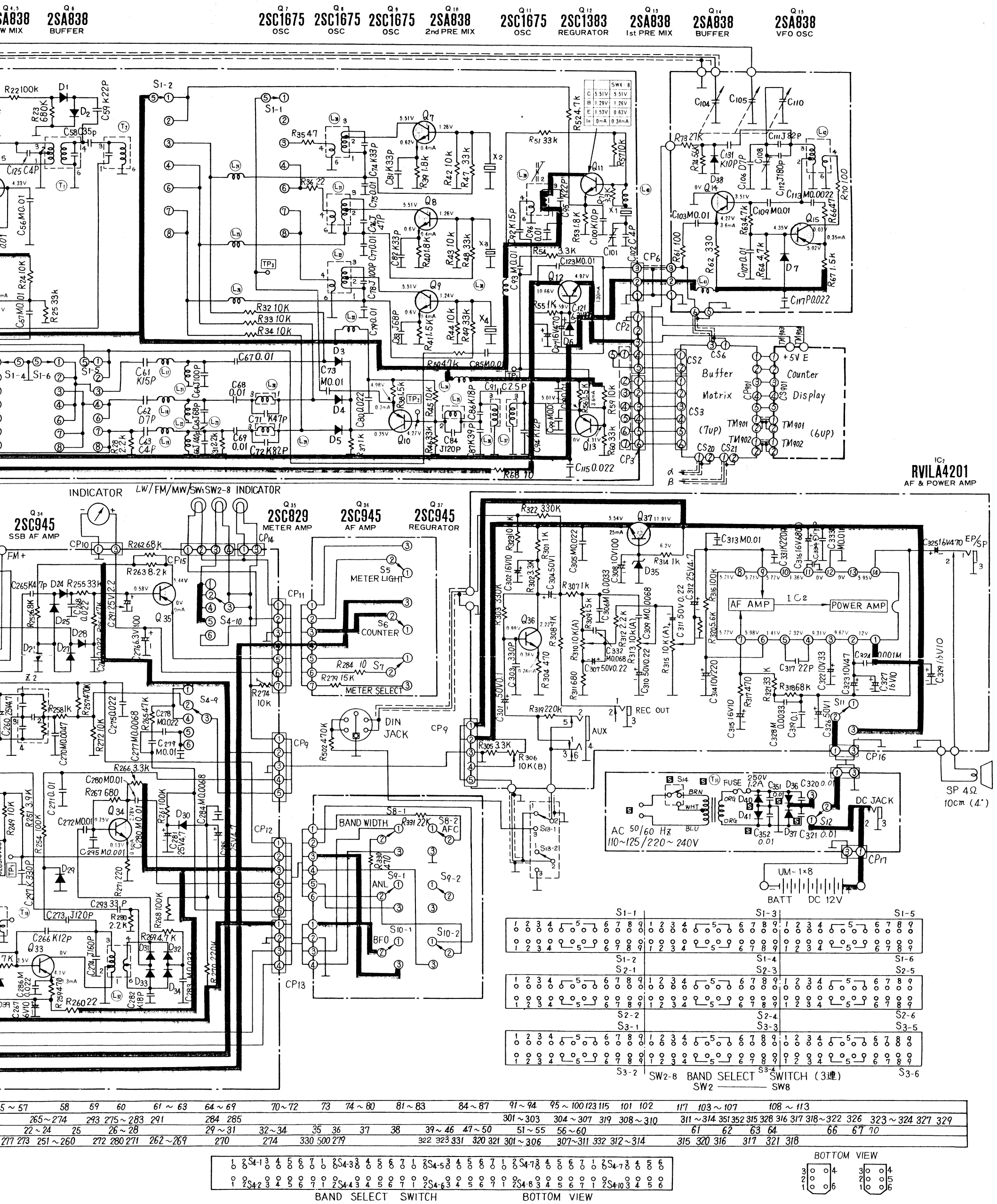
Notes:

- Notes:**
1. S₁₋₁~S₃₋₈: Band switch (SW₂~₈) in "SW₂" position.
 2. S₄₋₁~S₄₋₁₀: Band switch (SW₂~₈, SW₁, MW, FM) in "FM" position.
 3. S₅: Light switch in "OFF" position.
 4. S₆: Digital display switch in "OFF" position.
 5. S₇: Indicator switch in "SIGNAL" position.
 6. S₈₋₁, S₈₋₂: FM AFC/Band Width switch in "WIDTH" "AFC" position.
 7. S₉: AM ANL switch in "OFF" position.
 8. S₁₀₋₁, S₁₀₋₂: AM mode switch in "AM" position.
 9. S₁₁: Power switch in "OFF" position.

10. S₁₂: AC-BATTERY selector in "BATTERY" position.
 11. S₁₃: Voltage selector.
 12. DC voltage measurements are taken with circuit tester
 10k Ω /V from negative side of batteries.
☐.....FM position, ().....MW, SW position.
 < · >.....SW₂ position, [].....SW₃ position.
 Q₇...SW₄, Q₈...SW_{5, 6}, Q₉...SW_{7, 8} Q_{33, 34}...CW/SSB,
 Q_{14, 15, 37}...SW₂~₈
13. Battery current: No signal 45mA
 Maximum output 600mA

14. **S** Indicates that only parts supplied by the manufacturer be used for replacement.

Diagram - Model RF-4900LBS



Only parts specified by the manu-
replacement in critical circuits.

D _{1,2}	OA90	SW AGC
D _{3~5}	MA150	SWITCHING
D ₆	RVDEQA0106RF	ZENER
D ₇	RVDVD1261L	AOC
D _{8,9}	RVDVD1262L	AOC
D ₁₀	RVDSD113	COUNT ADJUST
D _{11,12}	OA90	AM AGC
D ₁₃	RVDSD113	FM AFC

D _{14,15}	MA150	SWITCHING
D ₁₆	OA90	FM AGC
D _{17~20}	MA150	SWITCHING
D _{21,22}	2-OA90	FM DET
D _{23~25}	OA90	AM METER RECT
D ₂₆	RVDVD1160L	AOC
D _{27,28}	OA90	FM METER RECT
D ₂₉	RVDSD113	BFO DET

D ₃₀	MA150	ANL
D _{31~34}	2-OA90	BFO DET
D ₃₅	RVDMZ206	Zener
D _{36,37}	RVD10E1LF	RECT
D ₃₈	RVDSD113	SWITCHING
D ₃₉	RVDVD1261M	AOC
D _{40,41}	RVD10E1LF	RECT

■ SW RF ALIGNMENT

	BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS
		CONNECTIONS	FREQUENCY				
SW1-RF ALIGNMENT							
(1)	SW1	Connect to EXT ANT (LW/MW/SW1) terminal.	1.6 MHz	1.6 MHz 2.9mm($\frac{1}{8}$ "	Output meter across voice coil.	L ₅₁ (SW1 OSC Coil) L ₄₄ (SW1 ANT Coil)	Adjust for maximum output.
(2)	SW1	"	3 MHz	3 MHz 58.1mm($2\frac{3}{8}$ "	"	C ₂₂₉ (SW1 OSC Trimmer) C ₂₀₇ (SW1 ANT Trimmer)	Adjust for maximum output. Repeat steps (1) and (2).
SW2-RF ALIGNMENT							
(3)	SW2	Connect to EXT ANT (SW2~SW8) terminal.	3 MHz	3 MHz 3mm($\frac{1}{8}$ "	"	L ₉ (SW2 TUNE Coil) L ₁ (SW2 ANT Coil)	Adjust for maximum output.
(4)	SW2	"	7 MHz	7 MHz 62.7mm($2\frac{5}{8}$ "	"	C ₃₃ (SW2 TUNE Trimmer) C ₁₀ (SW2 ANT Trimmer)	Adjust for maximum output. Repeat steps (3) and (4).
SW3-RF ALIGNMENT							
(5)	SW3	"	7 MHz	7 MHz 3mm($\frac{1}{8}$ "	"	L ₁₀ (SW3 TUNE Coil) L ₂ (SW3 ANT Coil)	Adjust for maximum output.
(6)	SW3	"	11.01 MHz	11.01 MHz 64.6mm($2\frac{3}{8}$ "	"	C ₃₄ (SW2 TUNE Trimmer) C ₁₁ (SW2 ANT Trimmer)	Adjust for maximum output. Repeat steps (5) and (6).
SW4-RF ALIGNMENT							
(7)	SW4	"	11.01 MHz	11.01 MHz 3mm($\frac{1}{8}$ "	"	L ₁₁ (SW4 TUNE Coil) L ₃ (SW4 ANT Coil)	Adjust for maximum output.
(8)	SW4	"	15.01 MHz	15.01 MHz 62.7mm($2\frac{5}{8}$ "	"	C ₃₅ (SW4 TUNE Trimmer) C ₁₂ (SW4 ANT Trimmer)	Adjust for maximum output. Repeat steps (7) and (8).
SW5-RF ALIGNMENT							
(9)	SW5	"	15.01 MHz	15.01 MHz 3mm($\frac{1}{8}$ "	"	L ₁₂ (SW5 TUNE Coil) L ₄ (SW5 ANT Coil)	Adjust for maximum output.
(10)	SW5	"	19.01 MHz	19.01 MHz 62.7mm($2\frac{5}{8}$ "	"	C ₃₆ (SW6 TUNE Trimmer) C ₁₃ (SW5 ANT Trimmer)	Adjust for maximum output. Repeat steps (9) and (10).
SW6-RF ALIGNMENT							
(11)	SW6	"	19.01 MHz	19.01 MHz 3mm($\frac{1}{8}$ "	"	L ₁₃ (SW6 TUNE Coil) L ₅ (SW6 ANT Coil)	Adjust for maximum output.
(12)	SW6	"	23.01 MHz	23.01 MHz 64.6mm($2\frac{3}{8}$ "	"	C ₃₇ (SW6 TUNE Trimmer) C ₁₄ (SW6 ANT Trimmer)	Adjust for maximum output. Repeat steps (11) and (12).
SW7-RF ALIGNMENT							
(13)	SW7	"	22.01 MHz	22.01 MHz 3mm($\frac{1}{8}$ "	"	L ₁₄ (SW7 TUNE Coil) L ₆ (SW7 ANT Coil)	Adjust for maximum output.
(14)	SW7	"	26.01 MHz	26.01 MHz 62.7mm($2\frac{5}{8}$ "	"	C ₃₈ (SW7 TUNE Trimmer) C ₁₅ (SW7 ANT Trimmer)	Adjust for maximum output. Repeat steps (13) and (14).
SW8-RF ALIGNMENT							
(15)	SW8	"	26 MHz	26 MHz 3mm($\frac{1}{8}$ "	"	L ₄₂ (SW8 OSC Coil) L ₁₅ (SW8 TUNE Coil) L ₇ (SW8 ANT Coil)	Adjust for maximum output.
(16)	SW8	"	30 MHz	30 MHz 64.6mm($2\frac{3}{8}$ "	"	C ₁₀₈ (SW8 OSC Trimmer) C ₃₉ (SW8 TUNE Trimmer) C ₁₆ (SW8 ANT Trimmer)	Adjust for maximum output. Repeat steps (15) and (16).

■ FM ALIGNMENT

SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING [DISTANCE]	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS
CONNECTIONS	FREQUENCY				
FM-IF ALIGNMENT					
(1)	High side crip to capacitor [C ₂₃₁] body point [TP ₂]. Negative side to point [E].	10.7 MHz (400 kHz SWP.)	Point of non-interference. (on/about 90 MHz).	Connect vert. amp. of scope to point [TP ₂]. Negative side to point [E].	T ₃ (FM 1st IFT) T ₆ (FM 2nd IFT) (Primary) Adjust for maximum amplitude. (Refer to fig. 32).
(2)	"	"	"	"	T ₇ (FM 2nd IFT) (Secondary) Adjust for maximum amplitude. (Refer to fig. 33).
FM-RF ALIGNMENT					
(3)	Connect to EXT ANT (FM) terminal through FM dummy antenna. (Refer to fig. 34).	87.5 MHz	Variable capacitor fully closed.	Output meter across voice coil.	L ₄₅ (FM OSC Coil) (*) Adjust for maximum output.
(4)	"	90 MHz	Tune to signal.	"	L ₄₆ (FM TUNE Coil) (*) Adjust for maximum output.
(5)	"	106 MHz	106 MHz 53.1mm (2 $\frac{3}{32}$ "')	"	C ₂₂₂ (FM OSC Trimmer) C ₂₁₈ (FM TUNE Trimmer) (*) Adjust for maximum output. Repeat steps (3)~(5).
(*) Three output responses will be present; proper tuning is the center frequency.					

(*) Three output responses will be present; proper tuning is the center frequency.

■ ALIGNMENT POINTS

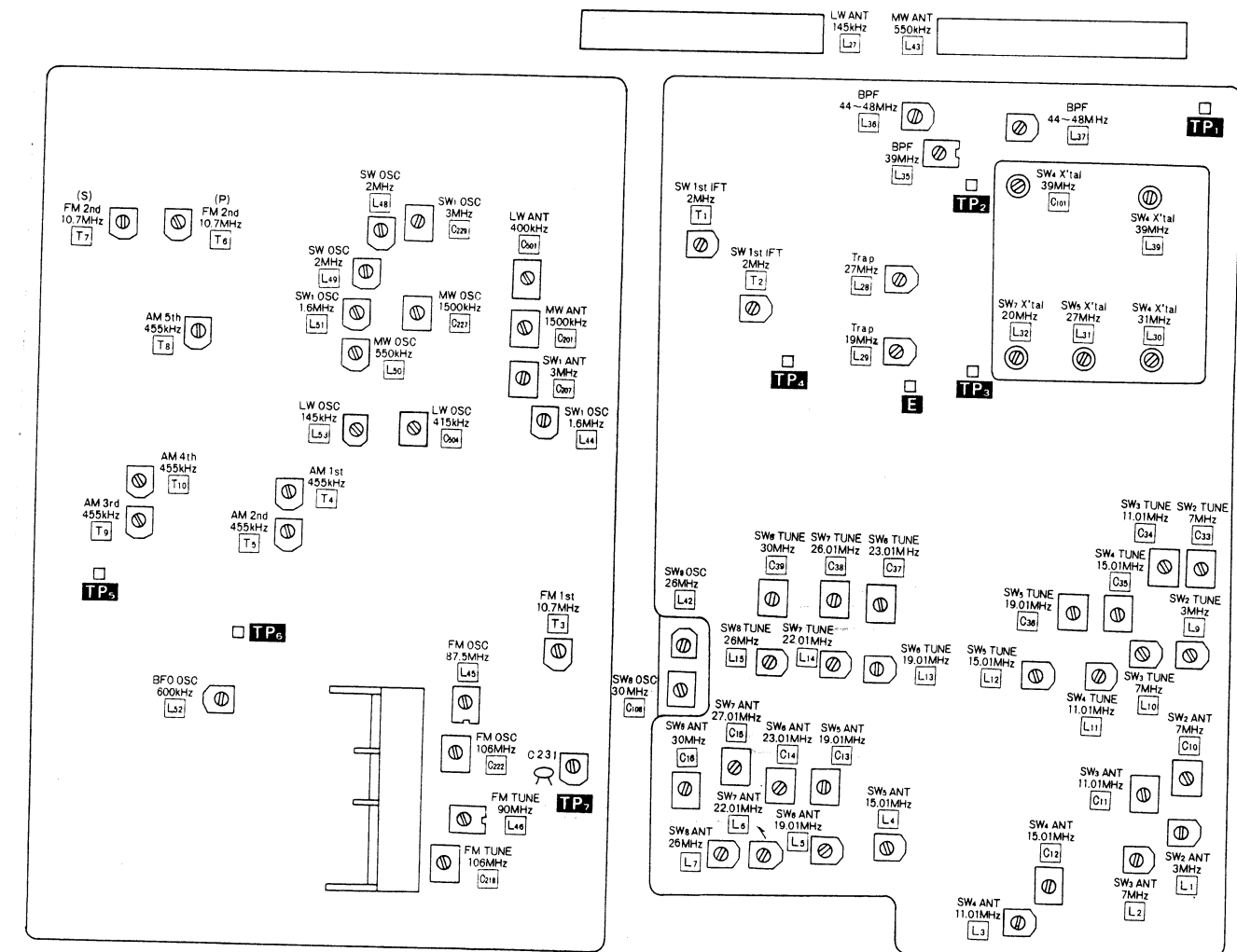


Fig. 35

Schematic Diagram (COUNTER CIRCUIT) – Model RF-4900LBS

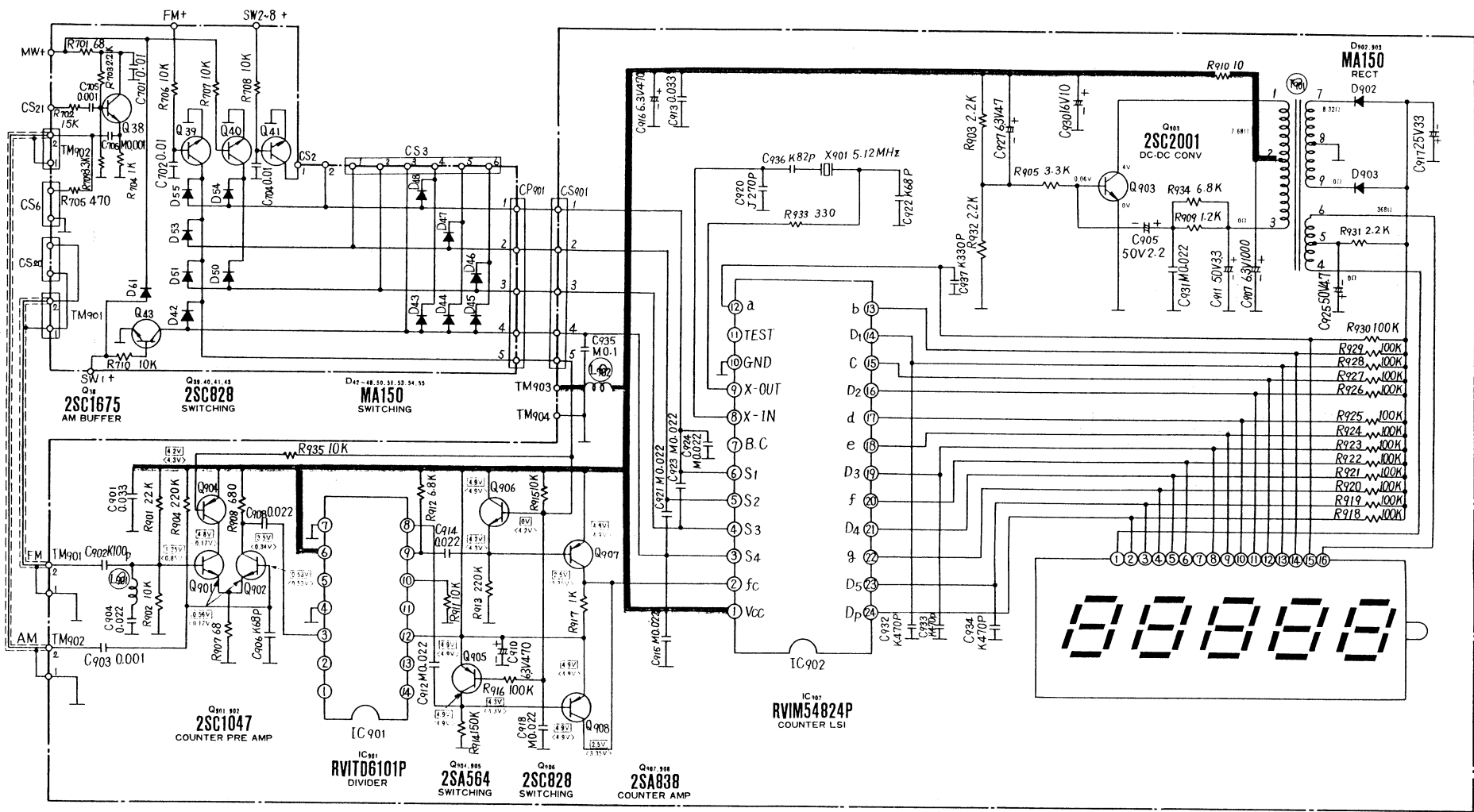


Fig. 36

■ BLOCK DIAGRAM

Block Diagram

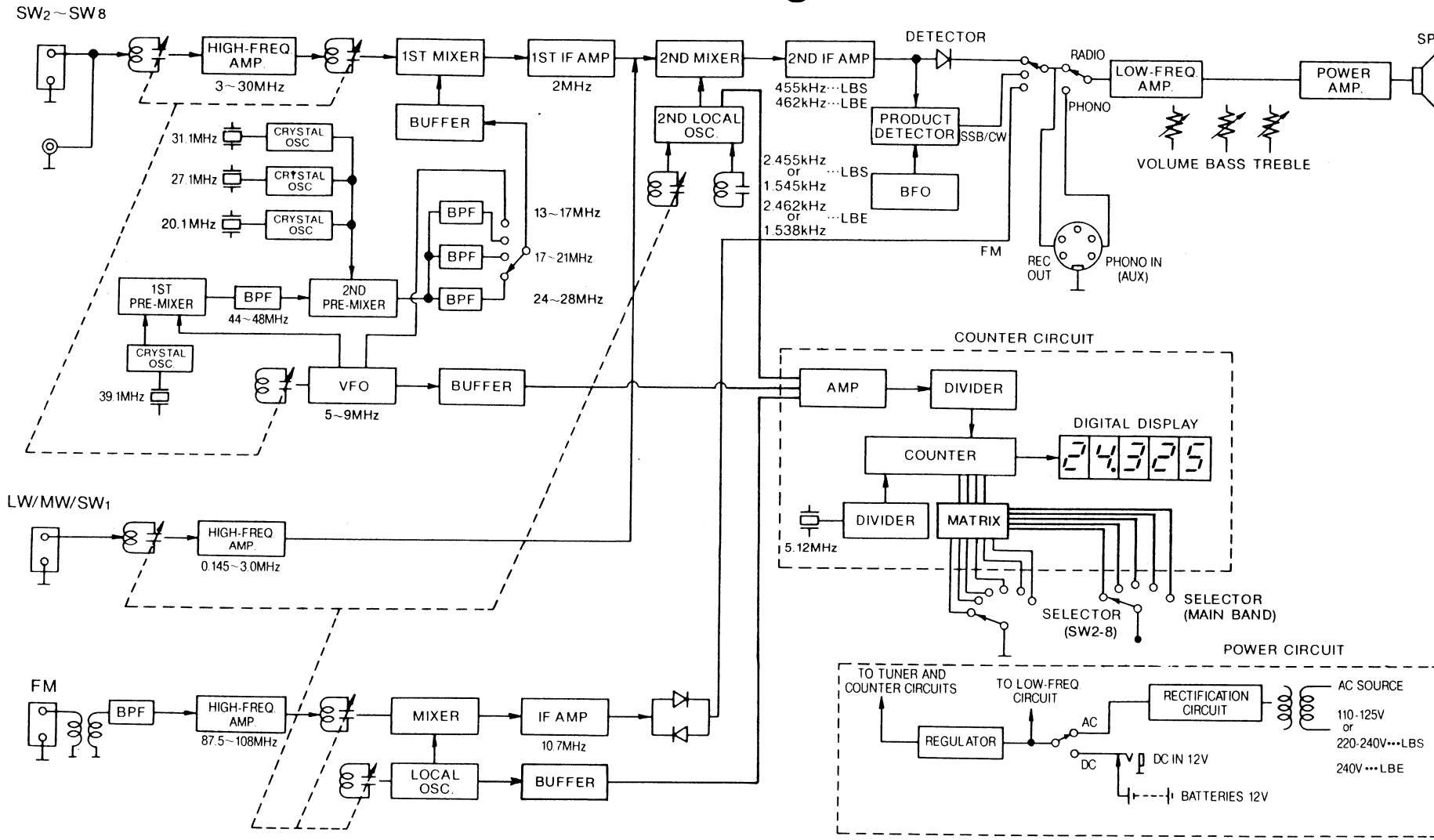
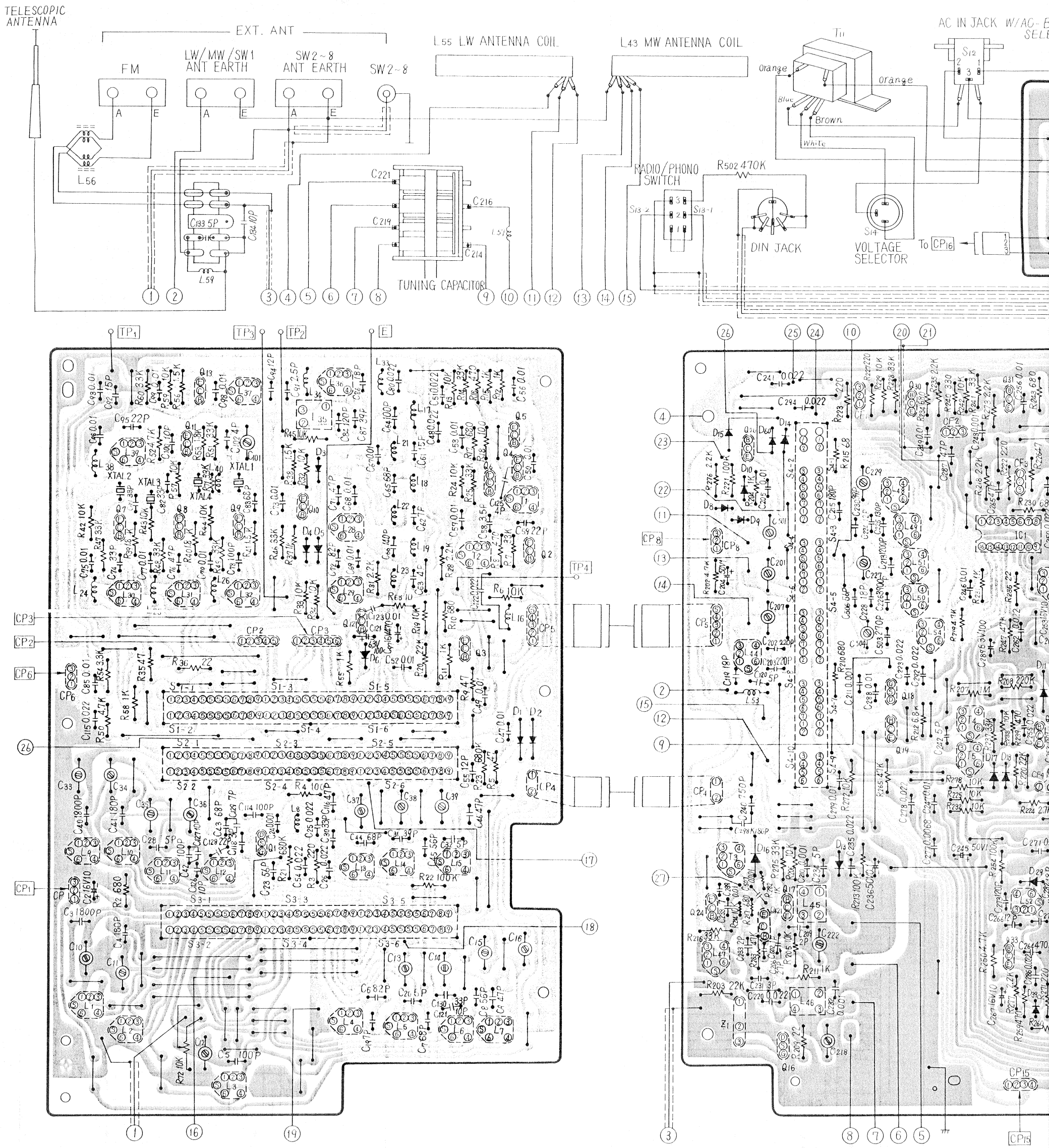
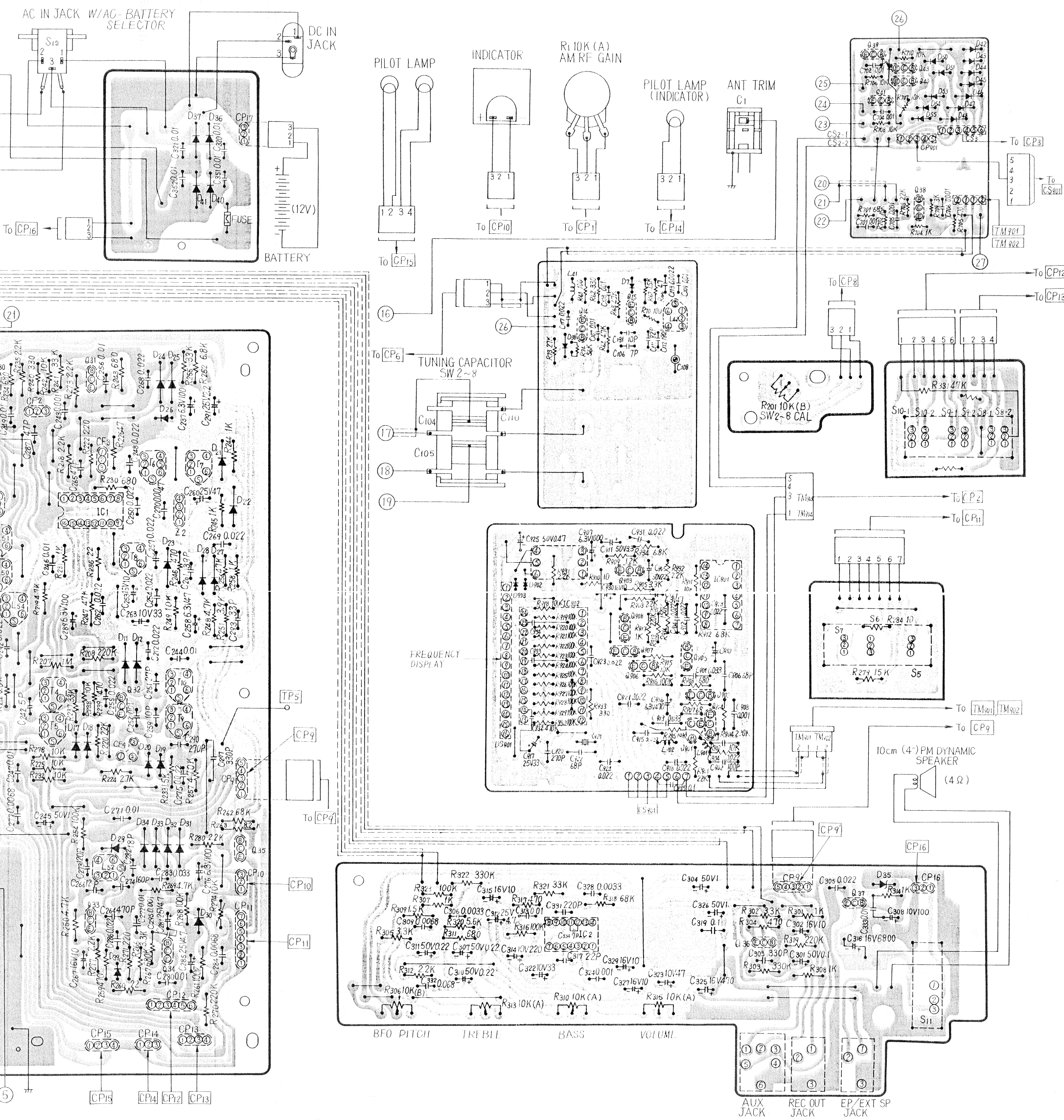


Fig. 37

Circuit Board Wiring View



Front Wiring View—Model RF-4900LBS



CHASSIS PARTS LOCATION

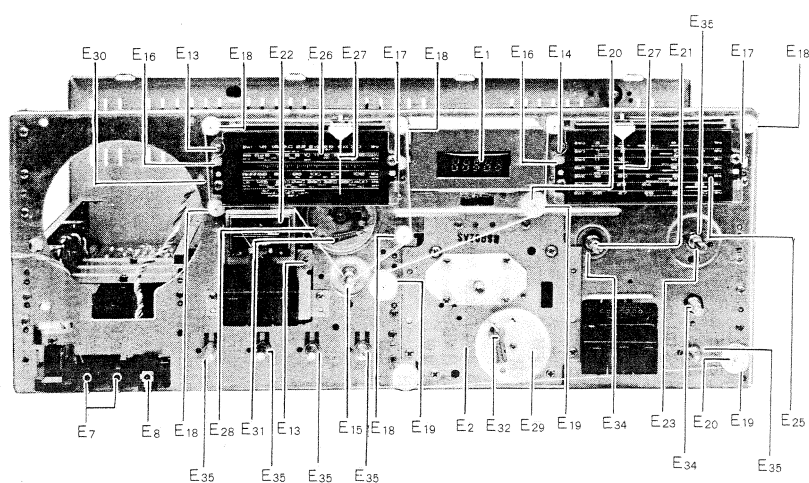


Fig. 38

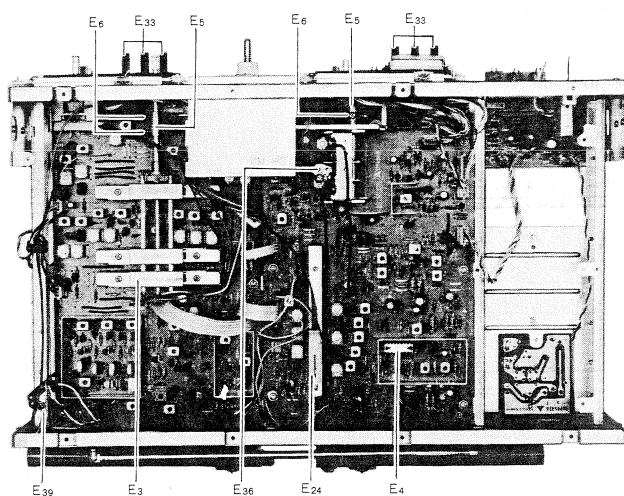


Fig. 39

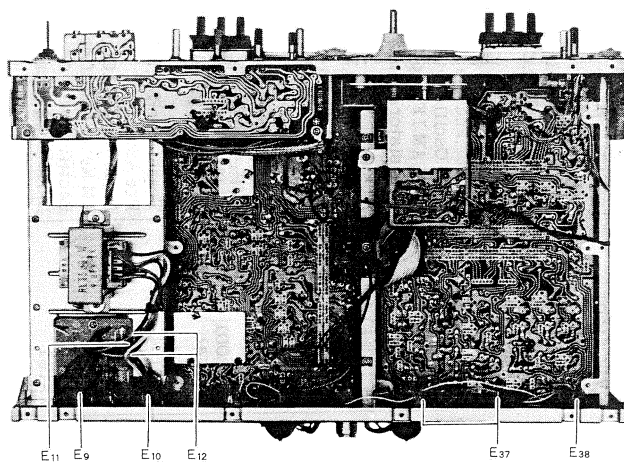


Fig. 40

REPLACEMENT PARTS LIST..... Model RF-4900LBS (RD7809-1612C)

NOTES: 1. Part numbers are indicated on most mechanical parts.
Please use this part number for parts orders.
2. **S** indicates that only parts specified by the manufacturer's be used for safety.
3. The **Ⓢ** mark is service standard parts and may differ from production parts.
4. The **○** mark is used by the manufacturing plant only.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
INTEGRATED CIRCUITS, TRANSISTORS AND DIODES				
IC1	RVIUPC1018CE	IC, FM/AM IF Amp.	1	
IC2	RVILA4201	IC, AF & Power Amp.	1	
IC901	RVITD6101P-1	IC, Divider	1	
IC902	RVIM54824P	IC, Counter LSI	1	○
Q1,16	2SK49	Transistor (Si), SW RF Amp., FM RF Amp.	2	
Q2,3,4,5,6,10,13,14,15,17,24,30,31,32,907,908	2SA838	Transistor (Ge), SW RF Amp., SW Mixer, Buffer, 2nd Pre Mix, 1st Pre Mix, VFO Oscillator, FM Oscillator, FM IF Amp., AM IF Amp., Counter Amp.	16	
Q7,8,9,11,38	2SC1675	Transistor (Si), Oscillator, AM Buffer Amp.	5	
Q12	2SD400	Transistor (Si), Regulator	1	
Q18	2SK104	Transistor (Si), AM RF Amp.	1	
Q19,39,40,41,43,906	2SC828	Transistor (Si), RF Gain Control	6	
Q20,34,35,36,37	2SC945	Transistor (Si), Switching, SSB AF Amp., AF Amp., Regulator, Meter Amp.	5	
Q903	2SC2001	Transistor (Si), Digit Driver	1	
Q33,904,905	2SA564	Transistor (Si), BFO Oscillator, Switching	3	
Q42,901,902	2SC1047	Transistor (Si), FM Buffer, Counter Pre Amp.	3	
D1,2,11,12,16,23,24,25,27,28	OA90	Diode (Ge), SW AGC, AM AGC, FM AGC, AM Meter Rectifier, FM Meter Rectifier	10	Ⓢ
D3,4,5,14,15,17,18,19,20,30,42,43,44,45,46,47,48,50,51,53,54,55,60,61,902,903	MA161	Diode (Si), Switching, ANL	25	Ⓢ
D6	RVDEQA0106RF	Diode (Si), Zener	1	
D8,9	RVDVD1262L	Diode (Si), AOC	2	
D10,13,29,38	RVDS113	Diode (Si), Count Adjust, FM AFC, BFO Detector	4	Ⓢ
D21,22,31,32,33,34	2-OA90	Diode (Ge), FM Detector, BFO Detector	6	Ⓢ
D26	RVDVD1160L	Diode (Si), AOC	1	
D35	RVDMZ206	Diode (Si), Zener	1	
D36,37,40,41	SM112	Diode (Si), Rectifier	4	
	RVDVD1261M	Diode (Si), AOC	2	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
CERAMIC FILTERS, COILS AND TRANSFORMERS				
CF1,2,3	RVF107MFR-1	Ceramic Filter	3	
CF4	RVFLFB4	Ceramic Filter	1	
L1,9	RLA3M32	Antenna Coil or Detector Coil, SW2	2	
L2,10	RLA3M33	Antenna Coil or Detector Coil, SW3	2	
L3,11	RLA3M34	Antenna Coil or Detector Coil, SW4	2	
L4,12	RLA3M35	Antenna Coil or Detector Coil, SW5	2	
L14,28,29	RLA3M37	Detector Coil, SW7	3	
		Trap Coil		
L5	RLA3M48	Antenna Coil, SW6	1	
L6	RLA3M49	Antenna Coil, SW7	1	
L7	RLA3M39	Antenna Coil, SW8	1	
L13	RLA3M36	Detector, Coil, SW6	1	
L15	RLA3M38	Detector Coil, SW8	1	
L30,31,32,36,37,39	RLO9M7	Oscillator Coil, Xtal, BPE Coil	6	
L35	RLD4M5	Coil, Trap	1	
L42	RLO3M52	Oscillator Coil, SW8	1	
L43	RLF5E54	Antenna Coil, MW	1	○
L44	RLA3M51	Antenna Coil, SW1	1	○
L45	RLD4M1	Oscillator Coil, FM	1	
L46	RLD4M8	Antenna Coil, FM	1	
L47	RLI4M103	Coil, Trap	1	
L48,51	RLO3M51	Oscillator Coil, 2nd Local & SW1	2	
L49	RLO9M6	Oscillator Coil, SW2~8	1	
L50	RLO2M16	Oscillator Coil, MW	1	
L52	RLO9M8	Oscillator Coil, BFO	1	
L54	RLO1M6	Oscillator Coil, LW	1	
L27	RLF1E1	Antenna Coil, LW	1	
L55	RLA4Z4	Baron Coil, FM	1	
T1	RLI9M3	IFT, SW 1st	1	
T2	RLI9M4	IFT, SW 1st	1	
T3	RLI4M101	IFT, FM 1st	1	
T4,9,10	RLI2M212	IFT, AM 1st, 3rd, 4th	3	
T5	RLI2M208	IFT, AM 2nd	1	
T6	RLI4M504	IFT, FM 2nd (Primary)	1	
T7	RLI4M506	IFT, FM 2nd (Secondary)	1	
T8	RLI2M402	IFT, AM 5th	1	
T11	RLT5U8	Power Transformer	1	Ⓢ
T901	RLT9E2	Power Transformer (Frequency Display)	1	Ⓢ
VARIABLE RESISTORS				
R1,72	EWKD1A046A14	Variable Resistor, 10KΩ (A), RF Gain Control	2	
R201	EVLD8AT12B14	Variable Resistor, 10KΩ (B), SW2~8 CAL	1	
R274	EVLTA4A00B14	Variable Resistor, 10KΩ (B), Meter Control	1	Ⓢ
R306	EVH8SA029B14	Variable Resistor, 10KΩ (B), BFO Pitch	1	
R310,313,315	EVH8SA029A14	Variable Resistor, 10KΩ (A), Bass, Treble & Volume Control	3	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
VARIABLE CAPACITORS				
C1	RCVC321A152	Tuning Capacitor	1	
C214,216,219,221	RCVCV45D112	Tuning Capacitor	1	
C104,105,110	RCVVCV35D112	Tuning Capacitor	1	
C10,201,501	RCV1PX10AG	Trimmer Capacitor	3	
C101	RCV1PX30AG	Trimmer Capacitor	1	
C11~16	RCV1PX20AG	Trimmer Capacitor	20	
33~39,108,207,218,222,227,229,504				
COMPONENT COMBINATIONS AND CRYSTALS				
Z1	RXABPMF1	Component Combination, Coils & Capacitors	1	
Z2	EXA5DLO4CC	Component Combination, 330PF×3, 4.7KΩ×2	1	
X1	RVCX39100N3R	Crystal	1	
X2	RVCX31100N3R	Crystal	1	
X3	RVCX27100N3R	Crystal	1	
X4	RVCX20100N3R	Crystal	1	○
X901	RVCX5120N5Z	Crystal, Xtal	1	
SPEAKER				
SP	EAS10P72S	Speaker, Imp.4Ω, 10cm (4"), PM Dynamic	1	
SWITCHES				
S1-1~S3-6	ESRK68S1	Switch, Band (SW2~8)	3	
S4-1~S4-10	ESA2625	Switch, Band (LW/FM/MW/SW1/SW2~8)	1	
S5~S7, S8-1, S8-2, S9	RSTX003Y	Switch, Light, Digital Display, Indicator, FM AFC/Band Width, MW ANL or AM Mode	2	
S10-1, S10-2				
S11	RST51YS	Switch, Power	1	
S13-1, S13-2	RSS142	Switch, Radio/Phono	1	
S14	RSR2A01Z	Switch, Voltage Selector	1	S
RESISTORS				
R910	ERD25TJ100	10Ω, ¼Watt, ±5%, Carbon	1	⊗
R284	ERD10TJ100	10Ω, ½Watt, ±5%, Carbon	1	○
R36,209,236,260	ERD25TJ220	22Ω, ¼Watt, ±5%, Carbon	4	⊗
R5,9,35,66,226	ERD25TJ470	47Ω, ¼Watt, ±5%, Carbon	5	⊗
R215,701	ERD25TJ680	68Ω, ¼Watt, ±5%, Carbon	2	⊗
R4,18,61,70	ERD25TJ101	100Ω, ¼Watt, ±5%, Carbon	4	⊗
R3,222,223,227,271	ERD25TJ221	220Ω, ¼Watt, ±5%, Carbon	5	⊗
R62,240	ERD25TJ331	330Ω, ¼Watt, ±5%, Carbon	2	⊗
R8,10,209,246,259,304,317,330,705	ERD25TJ471	470Ω, ¼Watt, ±5%, Carbon	9	⊗

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
R2,10,17,210,217,230,234,243,311	ERD25TJ681	680Ω, ¼Watt, ±5%, Carbon	9	⊗
R11,12,15,37,55,204,211,231,244,245,258,282,301,307,308,314,704	ERD25TJ102	1KΩ, ¼Watt, ±5%, Carbon	17	⊗
R909	ERD25TJ122	1.2KΩ, ¼Watt, ±5%, Carbon	1	⊗
R38,41,56,67,233,309	ERD25TJ152	1.5KΩ, ¼Watt, ±5%, Carbon	6	⊗
R28,31,218,220,235,273,276,277,280,312,703,932	ERD25TJ222	2.2KΩ, ¼Watt, ±5%, Carbon	12	⊗
R224	ERD25TJ272	2.7KΩ, ¼Watt, ±5%, Carbon	1	⊗
R54,266,302,305,709,905	ERD25TJ332	3.3KΩ, ¼Watt, ±5%, Carbon	6	⊗
R50,52,63,64,202,219,248,250,269	ERD25TJ472	4.7KΩ, ¼Watt, ±5%, Carbon	9	⊗
R320	ERD25TJ562	5.6KΩ, ¼Watt, ±5%, Carbon	1	⊗
R212,252,934	ERD25TJ682	6.8KΩ, ¼Watt, ±5%, Carbon	3	⊗
R6,13,19,24,32,33,34,42,43,44,45,57,59,205,206,214,225,229,232,238,242,249,272,278,707,708,706,710,935	ERD25TJ103	10KΩ, ¼Watt, ±5%, Carbon	29	⊗
R279,702	ERD25TJ153	15KΩ, ¼Watt, ±5%, Carbon	2	⊗
R20,203,331	ERD25TJ223	22KΩ, ¼Watt, ±5%, Carbon	3	⊗
R7,14,25,46,47,48,49,51,60,216,228,237,241,255,275,281,321	ERD25TJ333	33KΩ, ¼Watt, ±5%, Carbon	17	⊗
R247,256,283	ERD25TJ473	47KΩ, ¼Watt, ±5%, Carbon	3	⊗
R74	ERD25TJ563	56KΩ, ¼Watt, ±5%, Carbon	1	⊗
R262,318	ERD25TJ683	68KΩ, ¼Watt, ±5%, Carbon	2	⊗
R22,213,221,254,261,268,316,323	ERD25TJ104	100KΩ, ¼Watt, ±5%, Carbon	8	⊗
R208,270,319	ERD25TJ224	220KΩ, ¼Watt, ±5%, Carbon	3	⊗
R303,322	ERD25TJ334	330KΩ, ¼Watt, ±5%, Carbon	2	⊗
R257,502	ERD25TJ474	470KΩ, ¼Watt, ±5%, Carbon	2	⊗
R23,267	ERD25TJ684	680KΩ, ¼Watt, ±5%, Carbon	2	⊗
R39,40,53	ERD25TJ182	1.8KΩ, ¼Watt, ±5%, Carbon	3	⊗
R263	ERD25TJ822	8.2KΩ, ¼Watt, ±5%, Carbon	1	⊗
R71	ERD25TJ332	3.3KΩ, ¼Watt, ±5%, Carbon	1	⊗
R21	ERD25TJ684	680KΩ, ¼Watt, ±5%, Carbon	1	⊗
R251	ERD25TJ392	3.9KΩ, ¼Watt, ±5%, Carbon	1	⊗
R73	ERD25TJ273	27KΩ, ¼Watt, ±5%, Carbon	1	⊗
R207	ERD25TJ105	1MΩ, ¼Watt, ±5%, Carbon	1	⊗

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Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
R907	RRD18XK680	68Ω, 1/8Watt, ±10%, Chip	1	Ⓢ
R933	RRD18XK331	330Ω, 1/8Watt, ±10%, Chip	1	Ⓢ
R908	RRD18XK681	680Ω, 1/8Watt, ±10%, Chip	1	Ⓢ
R917	RRD18XK102	1KΩ, 1/8Watt, ±10%, Chip	1	Ⓢ
R903,931	RRD18XK222	2.2KΩ, 1/8Watt, ±10%, Chip	2	Ⓢ
R912	RRD18XK682	6.8KΩ, 1/8Watt, ±10%, Chip	1	Ⓢ
R902,911,915	RRD18XK103	10KΩ, 1/8Watt, ±10%, Chip	3	Ⓢ
R901	RRD18XK223	22KΩ, 1/8Watt, ±10%, Chip	1	Ⓢ
R916,918,919	RRD18XK104	100KΩ, 1/8Watt, ±10%, Chip	14	Ⓢ
920,921,922				
923,924,925				
926,927,928				
929,930				
R914	RRD18XK154	150KΩ, 1/8Watt, ±10%, Chip	1	Ⓢ
R904,913	RRD18XK224	220KΩ, 1/8Watt, ±10%, Chip	1	Ⓢ
R68	ERG12ANJ100	10Ω, 1/2Watt, ±5%, Metal Oxide	1	Ⓢ

CAPACITORS

G91	ECCD1H2R5C	2.5PF, 50WV, ±0.25PF, Ceramic	1	
G209,233	ECCD1H020C	2PF, 50WV, ±0.25PF, Ceramic	2	
G118,231	ECCD1H030C	3PF, 50WV, ±0.25PF, Ceramic	2	
C58	ECCD1H3R5C	3.5PF, 50WV, ±0.25PF, Ceramic	1	
G63,102,125	ECCD1H040C	4PF, 50WV, ±0.25PF, Ceramic	3	
G28,120,133,234,242	ECCD1H050CC	5PF, 50WV, ±0.25PF, Ceramic	5	
C502	ECCD1H010C	1PF, 50WV, ±0.25PF, Ceramic	1	
G19,62,129,238,334,106	ECCD1H070DC	7PF, 50WV, ±0.5PF, Ceramic	6	
G100,126,127	ECCD1H100KC	10PF, 50WV, ±10%, Ceramic	6	
134,259,131				
G20,55,94,266	ECCD1H120KC	12PF, 50WV, ±10%, Ceramic	4	
G224	ECCD1H120KW	12PF, 50WV, ±10%, Ceramic	1	
G61,92,132	ECCD1H150KC	15PF, 50WV, ±10%, Ceramic	3	
G86,119,228,22,282	ECCD1H180KC	18PF, 50WV, ±10%, Ceramic	5	
C59,95,128,317	ECCD1H220KC	22PF, 50WV, ±10%, Ceramic	4	
G206,251,290	ECCD1H270KC	27PF, 50WV, ±10%, Ceramic	3	
G21,30,74,81,82,130,293	ECCD1H330KC	33PF, 50WV, ±10%, Ceramic	7	
G31,87,230,261	ECCD1H390KC	39PF, 50WV, ±10%, Ceramic	4	
G71,116,265,287	ECCD1H470KC	47PF, 50WV, ±10%, Ceramic	4	
G23,32	ECCD1H560K	56PF, 50WV, ±10%, Ceramic	2	
C506	ECCD1H560KC	56PF, 50WV, ±10%, Ceramic	1	
G72	ECCD1H820K	82PF, 50WV, ±10%, Ceramic	1	
G114,902	ECCD1H101K	100PF, 50WV, ±10%, Ceramic	2	
C298	ECCD1H181K	180PF, 50WV, ±10%, Ceramic	1	
G906,922	ECCD1H680KC	68PF, 50WV, ±10%, Ceramic	2	
G936	ECCD1H820KC	82PF, 50WV, ±10%, Ceramic	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C331	ECCD1H221K	220PF, 50WV, ±10%, Ceramic	1	
C297,303,937	ECCD1H331K	330PF, 50WV, ±10%, Ceramic	3	
C932,933,934	ECKD1H471KB	470PF, 50WV, ±10%, Ceramic	3	
G210,211,243	ECKD1H102ZF	0.001μF, 50WV, ±20%, Ceramic	4	
903				
G24,232,295	ECKD1H102MD	0.001μF, 50WV, ±20%, Ceramic	7	
324,507,705				
706				
C113	ECKD1H222MD	0.0022μF, 50WV, ±20%, Ceramic	1	
C306,328	ECKD1H332MD	0.0033μF, 50WV, ±20%, Ceramic	2	
C270	ECKD1H472MD	0.0047μF, 50WV, ±20%, Ceramic	1	
C277,284,309	ECKD1H682MD	0.0068μF, 50WV, ±20%, Ceramic	3	
C67,68,69,75,77,79,96,98,107,205,244	ECKD1H103ZF	0.01μF, 50WV, ±20%, Ceramic	25	
247,249,239				
252,256,271				
288,320,321				
351,352,701				
702,704				
C47,49,50,52,53,56,57,73,85,93,99,103,109,246	ECKD1H103MD	0.01μF, 50WV, ±20%, Ceramic	18	
279,280,296				
333				
G25,26,48,51,54,80,115,117,211,220	ECKD1H223ZF	0.022μF, 50WV, ±20%, Ceramic	23	
223,235,254				
255,262,268				
269,275,292				
294,904,908				
914				
G122,912,915	ECKD1H223MD	0.022μF, 50WV, ±20%, Ceramic	7	
918,921,923				
924				
G901,913	ECKD1H333ZF	0.033μF, 50WV, ±20%, Ceramic	2	
G123,272,313	ECFVD103MD	0.01μF, 25WV, ±20%, Semi-Conductor	3	
G241,248,250	ECFVD223MD	0.022μF, 25WV, ±20%, Semi-Conductor	8	
257,278,286				
305,931				
C332	ECFVD683MD	0.068μF, 25WV, ±20%, Semi-Conductor	1	
C319,935	ECFVD104MD	0.1μF, 25WV, ±20%, Semi-Conductor	2	
C283	ECFVD333MD	0.033μF, 25WV, ±20%, Semi-Conductor	1	
G202,203	ECQS05221JZ	220PF, 50WV, ±5%, Styrol	2	
C264	ECQS05471JZ	470PF, 50WV, ±5%, Styrol	1	
G920	ECQS05271JZ	270PF, 50WV, ±5%, Styrol	1	
C9,46,76	ECMS05470JH	47PF, 50WV, ±5%, Styrol	3	
C8,45	ECMS05560JH	56PF, 50WV, ±5%, Styrol	2	
C7,43,44,65,83	ECMS05680JH	68PF, 50WV, ±5%, Styrol	5	
G6,111	ECMS05820JH	82PF, 50WV, ±5%, Styrol	2	
C5,42,64,78	ECMS05101JH	100PF, 50WV, ±5%, Styrol	4	
C84,273	ECMS05121JH	120PF, 50WV, ±5%, Styrol	2	
C225	ECMS05131JH	130PF, 50WV, ±5%, Styrol	1	
C66	ECMS05141JH	140PF, 50WV, ±5%, Styrol	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C274	ECMS05161JH	160PF, 50WV,±5%, Styrol	1	
C4,41,112,215	ECMS05181JH	180PF, 50WV,±5%, Styrol	4	
C917	ECEA1VS330	33μF, 50WV,±5%, Styrol	1	Ⓢ
C263,322	ECEA1CS330	33μF, 50WV,±5%, Styrol	1	Ⓢ
C260,281,285	ECEA1JS4R7	4.7μF, 50WV,±5%, Styrol	5	Ⓢ
312,925				
C291,905	ECEA2AS2R2	2.2μF, 50WV,±5%, Styrol	2	Ⓢ
C314	ECEA1AS221	220μF, 50WV,±5%, Styrol	1	Ⓢ
C258,323,927	ECEA1AS470	47μF, 50WV,±5%, Styrol	3	Ⓢ
C121,237,276	ECEA1AS101	100μF, 50WV,±5%, Styrol	5	Ⓢ
289,308				
C911	ECEA2AS3R3	3.3μF, 50WV,±5%, Styrol	1	Ⓢ
C2,253,267,302,315,327	ECEA1HS100	10μF, 50WV,±5%, Styrol	8	Ⓢ
329,930				
C907	ECEA0JS102	1000μF, 50WV,±5%, Styrol	1	Ⓢ
C910,916	ECEA0JS471	470μF, 50WV,±5%, Styrol	2	Ⓢ
C236,301	ECEA50ZR1	0.1μF, 50WV,±5%, Styrol	2	Ⓢ
C307,310,311	ECEA50ZR22	0.22μF, 50WV,±5%, Styrol	3	Ⓢ
C204,245,304	ECEA2AS010	1μF, 50WV,±5%, Styrol	4	Ⓢ
326				
C97,325	ECEA1CS471	470μF, 50WV,±5%, Styrol	2	Ⓢ
C316	ECET16R682SW	6800μF, 16WV,±5%, Styrol	1	○

CABINET

K1	RYPF4900LBSX	Front Panel Assembly	1	○
K2	RYEF4900LBSX	Indicating Plate Assembly	1	○
	RWBX4800N	Battery Case Assembly	1	
	RJC505Z	Terminal Spring,Battery ⊖ Side	4	
	RJT398A	Connecting Pipe,Terminal Spring	4	
	RJC111A	Terminal,Battery ⊕ Side	4	
K3	RYTF4900LBSX	Knob Assembly,SW2~8 Tuning	1	○
K4	RYT2JX4800N	Knob Assembly,SW1/MW/LW Tuning	1	
K5	XEARR252EASY	Telescopic Antenna	1	
K6	RKF367Z	Cabinet Cover	1	
K7	RKH5076Z	Handle,Cabinet	2	
K8	RKX125Z	Cover,Handle	4	
	RHG886Z	Rubber Cushion,Speaker	1	
K9	RBS103ZK	Knob,Band Selector	2	
K10	RBE15Y	Knob,Power	1	
K11	RBN381Z	Knob,Volume,Bass,Treble,BFO Pitch	6	
		Ant.Trim & AM RF Gain		
K12	RKU267V	Rear Panel	1	○
K13	RGT663Z	Name Plate	1	○
K14	RHG309C	Rubber Leg (Large),Cabinet	2	
K15	RHG325Z	Rubber Leg (Small),Cabinet	2	
K16	RKK92Z	Cover,Battery Compartment	2	
K17	RJS35A	Socket,FM Ant.	1	
K18	RJS136Z	Socket,SW Ant.	2	
K19	RJS95AV	Socket,SW Ant.	1	
K20	RJS31-1	Socket,Din	1	
K21	SMA205	Holder,Core Antenna	2	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
K22	SMA207	Holder,Core Antenna	2	
K23	RBE4Y	Knob,SW2~8 Cal	1	
	RHE5005-8	Screw,Knob M'tg	1	
K24	XSB3+8BVS	Screw,Cabinet Cover M'tg	15	
K25	XTN3+8C	Screw,Cabinet Cover M'tg	2	
K26	XYN4+C16S	Screw,Handle M'tg	4	
K27	RMA5086Z	Bracket,Telescopic Antenna	1	○
K28	RMA5014A	Holder,Telescopic Antenna	1	

CHASSIS

E1	RAD5-BT-11	Display (DS901)	1	
E2	RSG9ZS	Dial Mechanism Assembly	1	
E3	ESRK307F35A	Shaft,Switch (SW2~8)	1	
E4	RMCI71Y	Shield Plate,IC1	1	
E5	RHE37Z	Joint,Tuning Capacitor & Switch	2	
		Shaft		
E6	XSN3+6S	Screw,Joint M'tg	8	
E7	RJJ87Y	Jack,Rec.Out & EXT.EP.SP.	2	
E8	RJJ82Z	Jack Aux	1	
E9	RJJ115Z	Jack,AC IN	1	Ⓢ
E10	RJJ104Z	Jack,DC IN	1	Ⓢ
E11	XBA2C12TRO	Fuse,250V, 1.2A	1	Ⓢ
E12	RJF7A	Holder,Fuse	2	Ⓢ
E13	XAMR48S100A	Pilot Lamp,12V, 40mA	2	
E14	XAMR48S250A	Pilot Lamp, 12V, 40mA	1	
E15	RDT9091Z	Shaft,Tuning	1	
E16	RUM39Z	Bracket,Dial Scale	2	
E17	RUM40Y	Bracket,Dial Scale	2	
E18	RDR20-3	Pulley (Small),Dial	7	
E19	RDR23-1	Pulley (Large),Dial	4	
E20	RNW150-2	Washer,Pulley	11	
E21	RDF803ZK	Shaft,SW2~8 Switch	1	
E22	RSM2622Z	Meter,Tune/Battery	1	○
E23	ESA23406	Shaft,Switch	1	
E24	ESA20803B	Wire,Switch	1	
E25	RKD456V	Scale,SW2~8	1	○
E26	RKD455V	Scale,SW1/MW/FM/LW	1	○
E27	RDP170Z	Pointer,Dial	2	
E28	RDD4012Z	Drum,Dial (SW1/MW/FM/LW)	1	
E29	RDD441Z	Drum,Dial (SW2~8)	1	
E30	RDZ05Z	Cord,Dial	1 Roll	
E31	RDS4060A	Spring,Drum (RDD4012Z)	1	Ⓢ
E32	RDS3090A	Spring,Drum (RDD441Z)	1	Ⓢ
E33	RBE17Z	Knob,Switch	6	
E34	XNS9PFZ	Nut,SW Switch Shaft & Ant. Trim	2	
		M'tg		
E35	XNS8	Nut,Volume,Bass,Treble & etc.M'tg	7	
E36	RJR207	Lug Terminal	1	
E37	RJS55A	Terminal,LW/MW/SW1,SW2~8,EXT.	2	
		Ant.		
E38	RJS56A	Terminal,FM EXT.Ant.	1	
E39	RJR801-2	Lug Terminal	1	

F-4900LBS

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Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
ACCESSORIES				
	RJA20Z	Power Cord,AC	1	S S S
	RSA204Z	FM Antenna	1	
	XEH15A1-B	Magnetic Earphone	1	
	RJP97Z	Plug,SW2~8 Antenna	1	
	RXEF4800LBSX	Antenna Plug Assembly	1	
PACKING MATERIALS				
	RPN9243Z	Pad Complete	1	O O O O
	(Not Available, Order RPN9243Z)	Pad,Left Side	(1)	
		Pad,Right Side	(1)	
	RPG1974Z	Packing Case	1	
	RQX6309Z	Instruction Book	1	
	RQX9144Y		1	

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